
Work Order No. 15730.001.008

**Pulp Dryer, No. 3 Paper Machine Vents,
No. 2 and 3 Smelt Dissolving Tank Vents,
and No. 1 and 2 Combination Boilers
Emission Test Report
New-Indy Catawba, LLC
Catawba, South Carolina
Test Dates: 21-27 June 2021**

Prepared For

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WESTON SOLUTIONS, INC. (WESTON®)
INTEGRATED AIR SERVICES – AUBURN OPERATIONS
ACCREDITATION STIPULATION

Laboratory:	Weston Solutions, Inc.
Accreditor(s):	Louisiana Environmental Laboratory Accreditation Program (LELAP) – Laboratory and Emission Testing Practice
Accreditation ID:	LELAP – 03024
Scope:	Total Reduced Sulfur and Sulfur Dioxide Sampling and Analysis
Effective:	LELAP – 21 December 2001
Renewal Date:	LELAP – 30 June 2022

Data Qualifiers



The following are general reporting notes that are applicable to all WESTON reports, unless otherwise noted.

- **NL** denotes data that was not from a LELAP accredited method.
- **LNL** denotes lab results that are not from an accredited LELAP laboratory.
- **NN** denotes data that was not from The NELAC Institute (TNI) accredited method.
- **NNL** denotes lab results that are not from an accredited TNI laboratory.
- **ED** denotes data that is not to be used for compliance purposes and may deviate from approved procedures.
- **Q** denotes data whose QA/QC check did not fall within the specified range. This data is still considered valid.
- **A** denotes data that is anomalously high with no explanation for the outlier.
- **BDL** denotes values that were below the limit of detection of the analyzer and 2% of the span gas was used to calculate an emission rate.
- **DF** denotes a dilution factor.
- **NAP** denotes emission testing performed by personnel from a non-TNI accredited laboratory.
- **S** denotes analysis that has been subcontracted.
- All values are reported on a “dry” basis, unless otherwise designated as “actual” or “wet” basis.



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SECTION 1 INTRODUCTION

Weston Solutions, Inc. (WESTON®) was contracted by New-Indy Catawba, LLC (NIC) to conduct emission testing on the Pulp Dryer, No. 3 Paper Machine Vents, No. 2 and 3 Smelt Dissolving Tank Vents (SDTV), and No. 2 and 3 Combination Boilers (CB) at the NIC mill in Catawba, South Carolina. The purpose of the testing was to document the emissions from sources identified in Condition No. 5 (Order to Correct Undesirable Level of Air Contaminants) issued by the South Carolina Department of Health and Environmental Control (SC DHEC).

WESTON performed the emission testing during 21-27 June 2021. The project team included the following individuals.

Name	Project Role
Wayne Roberts	Project Manager/Test Team Leader (Team 2)
Van Dubay	Test Team Leader (Team 1)
Tyler Robinson	Test Team Member (Team 1)
Cory Lestochi	Test Team Member (Team 1)
Bryan Alldredge	Test Team Member (Team 2)
Brock Ennis	Test Team Member (Team 2)
Templeton Simpkins	Test Team Member
Chris Hartsky	Test Team Member (Liquid Sample Collection)
Natalie Hammonds	Quality Assurance Manager
Ashley Bryant	Report Coordinator

Mr. Dan Mallett of NIC coordinated the testing with mill operations and served as WESTON's technical contact throughout the effort. Mr. David Monroe of SC DHEC was present during the testing on 22, 23, and 26 June 2021. Mr. James Justice of SC DHEC was present during the testing on 22-26 June 2021. Mr. Derek Williams of SC DHEC was present during the testing on 27 June 2021.

The Louisiana Environmental Laboratory Accreditation Program (LELAP) is the accrediting body through which WESTON obtains both its LELAP and TNI accreditations. WESTON is accredited for operations in the states of Texas, Florida, and Virginia through reciprocity agreements with LELAP.



SECTION 2

RESULTS AND DISCUSSION

The test program was to be completed between 15 June 2021 and 30 June 2021 as described in Condition 5. A WESTON test team conducted cyclonic flow checks on the No. 3 Paper Machine Vents on 15 June 2021. Stack extensions were installed on all vents to meet Method 1 criteria. All vents were determined to be noncyclonic and suitable for testing.

WESTON utilized two separate mobile laboratories and two separate test teams to complete the scope of work within the described timeline. The two teams traveled to NIC on 21 June 2021 and set up all the necessary equipment for testing. Team 1 was located on the No. 1 and 2 CBs with Team 2 located at the Paper Machine. Testing was scheduled to begin on 22 June 2021 but was delayed due to issues with the pulp mill that resulted in plugging of the process lines during the evening of 21 June 2021. Mill operations were back under normal operations on 23 June 2021, and testing was initiated. Team 1 conducted sulfur dioxide (SO₂) and total reduced sulfur (TRS) measurements on CB1 operating with non-condensable gases (NCG) and stripper off gases (SOG) in the boiler followed by Condition 2, which consisted of three more sample runs with only the NCGs in CB1. Team 2 conducted testing on Paper Machine Vent 1. After reviewing the flow data collected on 23 June with the cyclonic flow data collected on 15 June, it was apparent that there was an issue with the fan on the No. 1 Paper Machine. Mill maintenance personnel verified that the belts on No. 1 and No. 2 Paper Machine Vents were damaged. The belts were replaced, and the No. 1 Paper Machine Vent testing was rescheduled for later in the week. The data collected on the No. 1 Paper Machine Vent (6-23-21) has been included in Appendix D for reference only.

On 24 June 2021, Test Team 1 conducted SO₂ and TRS measurements on CB2 while burning both the NCG and SOG gases. Test Team 2 started testing on the Paper Machine Vent 3 conducting three TRS sample runs. After completing Paper Machine Vent 3, the team moved to Paper Machine Vent 2 and conducted three one-hour TRS sample runs. It was determined through multiple discussions that the Paper Machine had a total of 7 vents rather than the 6 vents previously included in the scope of work and test plan. The 7 Paper Machine Vents are designated as Vents 1, 2, 3, 4, 6, 7, and 8. Adjustments were made to the schedule to sample all 7 vents.

On 25 June 2021, Test Team 1 conducted SO₂ and TRS measurements on CB2 while burning NCG gases only. Test Team 2 started testing on Paper Machine Vent 1 followed by Paper Machine Vent 4 and finally Paper Machine Vent 6. Three one-hour TRS sample runs were conducted on each vent.

On 26 June 2021, Test Team 1 conducted TRS measurements on the Pulp Dryer following the installation of the stack extension and scaffold. A cyclonic flow determination was conducted prior to the start of testing, and the stack was determined to be noncyclonic. Test Team 2 started testing on Paper Machine Vent 7 followed by Paper Machine Vent 8.

On 27 June 2021, Test Team 1 conducted TRS measurements on the No. 2 and 3 Combined SDTVs. All Paper Machine testing had been completed and verified as accurate.

Although cyclonic flow checks had been conducted on all the Paper Machine Vents prior to the start of testing, a second cyclonic flow check was conducted on the day of testing for each vent. The TRS concentrations on all Paper Machine Vents were less than 1 ppm. Volumetric flow rate (VFR) measurements were conducted using a Method 5 train with a heated probe, heated filter, and a cold box. A full 16-point traverse was conducted on each vent. Gravimetric measurements were conducted on each impinger before and after each run. Volumetric flow rate run time was set at 48 minutes for all flow measurements conducted simultaneously with the 60-minute TRS measurement to allow time for port changes and leak checks.

Cyclonic flow checks were also conducted prior to the start of testing on CB1, CB2, Pulp Dryer, and the SDTV. Volumetric flow rate measurements were conducted using a Method 5 train with a heated probe, heated filter, and a cold box. Gravimetric measurements were conducted on each impinger before and after each run. The VFR run time was set at 48-60 minutes for all flow measurements conducted simultaneously with the pollutant measurement.

Water samples were also collected by NIC personnel during 24-26 June 2021. These samples were analyzed by ALS Environmental at their Simi Valley, California laboratory. The samples were analyzed for five sulfur compounds using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). The laboratory report can be found in Appendix G.

All testing proceeded as planned. The test teams coordinated with mill operations to ensure each process was operating at normal operating rates. Process data is included in Appendix H to document the operating rate for each source.

Table 2-1 provides a summary of the mean emission results for each source. Tables 2-2 through 2-14 provide detailed summaries of the emission results. Tables 2-15 through 2-18 provide detailed summaries of the water sample test results. Measurement uncertainty is not shown but has been taken into consideration during method development. Any differences between the calculated results presented in the appendices and the results reported in the summary tables are due to rounding for presentation.

As requested by the SC DHEC, the TRS results have been calculated to include the full detection limit for any compounds (H₂S, MeSH, DMS, and DMDS) that were below detection. The TRS results presented in the first report submittal considered any numbers below detection as zero. The initial TRS run data and the updated TRS run data are both included in the Field Data Appendices for a reference.

**TABLE 2-1
SUMMARY OF MEAN EMISSION RESULTS**

Source/Parameter	Mean Test Value
Pulp Dryer	
Hydrogen Sulfide, lb/hr	0.02
Total Reduced Sulfur, lb/hr	0.23
No. 3 Paper Machine Vent 1	
Hydrogen Sulfide, lb/hr	0.04
Total Reduced Sulfur, lb/hr	0.12
No. 3 Paper Machine Vent 2	
Hydrogen Sulfide, lb/hr	0.07
Total Reduced Sulfur, lb/hr	0.22
No. 3 Paper Machine Vent 3	
Hydrogen Sulfide, lb/hr	0.09
Total Reduced Sulfur, lb/hr	0.26
No. 3 Paper Machine Vent 4	
Hydrogen Sulfide, lb/hr	0.04
Total Reduced Sulfur, lb/hr	0.12
No. 3 Paper Machine Vent 6	
Hydrogen Sulfide, lb/hr	0.05
Total Reduced Sulfur, lb/hr	0.16
No. 3 Paper Machine Vent 7	
Hydrogen Sulfide, lb/hr	0.04
Total Reduced Sulfur, lb/hr	0.18
No. 3 Paper Machine Vent 8	
Hydrogen Sulfide, lb/hr	0.04
Total Reduced Sulfur, lb/hr	0.21
No. 2 and 3 Smelt Dissolving Tank Vents	
Hydrogen Sulfide, lb/hr	0.94
Total Reduced Sulfur, lb/hr	1.14
No. 1 Combination Boiler (Condition 1: NCG & SOG Gases)	
Hydrogen Sulfide, lb/hr	0.07
Total Reduced Sulfur, lb/hr	0.75
Sulfur Dioxide, lb/hr	360.9
No. 1 Combination Boiler (Condition 2: NCG Gases Only)	
Hydrogen Sulfide, lb/hr	0.05
Total Reduced Sulfur, lb/hr	0.68
Sulfur Dioxide, lb/hr	436.1
No. 2 Combination Boiler (Condition 1: NCG & SOG Gases)	
Hydrogen Sulfide, lb/hr	0.07
Total Reduced Sulfur, lb/hr	0.85
Sulfur Dioxide, lb/hr	504.0
No. 2 Combination Boiler (Condition 2: NCG Gases Only)	
Hydrogen Sulfide, lb/hr	0.04
Total Reduced Sulfur, lb/hr	0.92
Sulfur Dioxide, lb/hr	376.4

TABLE 2-2
PULP DRYER
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/26/21	6/26/21	6/26/21	----
Time Began	1230	1347	1506	----
Time Ended	1339	1454	1611	----
Stack Gas Data				
Temperature, °F	158	159	158	158
Velocity, ft/sec	43	44	44	43
Moisture, %	7.8	11	9.2	9.2
CO ₂ Concentration, %	0.0	0.0	0.0	0.0
O ₂ Concentration, %	20.8	20.9	20.9	20.9
VFR, x 10 ⁴ dscfm	3.93	3.90	3.97	3.93
Hydrogen Sulfide				
Concentration, ppm	0.09	0.08	0.07	0.08
Emission Rate, lb/hr	0.02	0.02	0.02	0.02
Total Reduced Sulfur				
Concentration, ppm	1.18	1.09	1.06	1.11
Emission Rate, lb/hr	0.25	0.23	0.22	0.23

TABLE 2-3
NO. 3 PAPER MACHINE VENT 1
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	----
Time Began	0755	0900	1005	----
Time Ended	0855	1000	1105	----
Stack Gas Data				
Temperature, °F	171	172	173	172
Velocity, ft/sec	64	63	63	63
Moisture, %	19	19	18	19
CO ₂ Concentration, %	0.2	0.2	0.2	0.2
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	3.50	3.47	3.47	3.48
Hydrogen Sulfide				
Concentration, ppm	0.18	0.22	0.22	0.20
Emission Rate, lb/hr	0.03	0.04	0.04	0.04
Total Reduced Sulfur				
Concentration, ppm	0.58	0.64	0.69	0.64
Emission Rate, lb/hr	0.11	0.12	0.13	0.12

TABLE 2-4
NO. 3 PAPER MACHINE VENT 2
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	----
Time Began	1310	1416	1522	----
Time Ended	1410	1516	1622	----
Stack Gas Data				
Temperature, °F	178	178	179	179
Velocity, ft/sec	78	77	80	78
Moisture, %	20	19	19	19
CO ₂ Concentration, %	0.2	0.2	0.2	0.2
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	5.20	5.26	5.45	5.30
Hydrogen Sulfide				
Concentration, ppm	0.31	0.20	0.27	0.26
Emission Rate, lb/hr	0.08	0.06	0.08	0.07
Total Reduced Sulfur				
Concentration, ppm	0.82	0.78	0.72	0.77
Emission Rate, lb/hr	0.23	0.22	0.21	0.22

TABLE 2-5
NO. 3 PAPER MACHINE VENT 3
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	----
Time Began	0937	1042	1145	----
Time Ended	1037	1142	1245	----
Stack Gas Data				
Temperature, °F	185	187	182	185
Velocity, ft/sec	83	82	82	82
Moisture, %	21	21	20	21
CO ₂ Concentration, %	0.2	0.2	0.2	0.2
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	5.45	5.30	5.51	5.42
Hydrogen Sulfide				
Concentration, ppm	0.30	0.29	0.32	0.30
Emission Rate, lb/hr	0.09	0.08	0.09	0.09
Total Reduced Sulfur				
Concentration, ppm	0.95	0.84	0.87	0.89
Emission Rate, lb/hr	0.27	0.24	0.25	0.26

TABLE 2-6
NO. 3 PAPER MACHINE VENT 4
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	----
Time Began	1135	1240	1345	----
Time Ended	1235	1340	1445	----
Stack Gas Data				
Temperature, °F	193	194	194	194
Velocity, ft/sec	55	58	55	56
Moisture, %	27	27	26	27
CO ₂ Concentration, %	0.2	0.2	0.2	0.2
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	3.32	3.47	3.31	3.37
Hydrogen Sulfide				
Concentration, ppm	0.23	0.20	0.31	0.25
Emission Rate, lb/hr	0.04	0.04	0.06	0.04
Total Reduced Sulfur				
Concentration, ppm	0.69	0.66	0.73	0.69
Emission Rate, lb/hr	0.12	0.12	0.13	0.12

TABLE 2-7
NO. 3 PAPER MACHINE VENT 6
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	----
Time Began	1555	1715	1820	----
Time Ended	1655	1816	1920	----
Stack Gas Data				
Temperature, °F	191	191	190	191
Velocity, ft/sec	79	80	76	78
Moisture, %	25	26	22	25
CO ₂ Concentration, %	0.2	0.2	0.2	0.2
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	4.18	4.18	4.21	4.19
Hydrogen Sulfide				
Concentration, ppm	0.21	0.22	0.22	0.22
Emission Rate, lb/hr	0.05	0.05	0.05	0.05
Total Reduced Sulfur				
Concentration, ppm	0.70	0.71	0.69	0.70
Emission Rate, lb/hr	0.16	0.16	0.15	0.16

TABLE 2-8
NO. 3 PAPER MACHINE VENT 7
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/26/21	6/26/21	6/26/21	----
Time Began	0945	1050	1155	----
Time Ended	1046	1150	1255	----
Stack Gas Data				
Temperature, °F	188	188	190	189
Velocity, ft/sec	75	74	76	75
Moisture, %	26	24	25	25
CO ₂ Concentration, %	0.2	0.1	0.2	0.2
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	6.40	6.42	6.52	6.45
Hydrogen Sulfide				
Concentration, ppm	0.11	0.10	0.17	0.12
Emission Rate, lb/hr	0.04	0.03	0.06	0.04
Total Reduced Sulfur				
Concentration, ppm	0.48	0.50	0.59	0.52
Emission Rate, lb/hr	0.16	0.17	0.20	0.18

TABLE 2-9
NO. 3 PAPER MACHINE VENT 8
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/26/21	6/26/21	6/26/21	----
Time Began	1315	1420	1525	----
Time Ended	1415	1520	1625	----
Stack Gas Data				
Temperature, °F	184	184	184	184
Velocity, ft/sec	72	74	70	72
Moisture, %	24	23	23	23
CO ₂ Concentration, %	0.1	0.1	0.1	0.1
O ₂ Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 ⁴ dscfm	6.31	6.57	6.27	6.38
Hydrogen Sulfide				
Concentration, ppm	0.13	0.10	0.13	0.12
Emission Rate, lb/hr	0.04	0.03	0.04	0.04
Total Reduced Sulfur				
Concentration, ppm	0.66	0.58	0.61	0.62
Emission Rate, lb/hr	0.22	0.20	0.20	0.21

TABLE 2-10
NO. 2 AND 3 SMELT DISSOLVING TANK VENTS
SUMMARY OF H₂S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/27/21	6/27/21	6/27/21	----
Time Began	1100	1222	1344	----
Time Ended	1210	1331	1454	----
Stack Gas Data				
Temperature, °F	168	170	169	169
Velocity, ft/sec	31	33	32	32
Moisture, %	39	41	41	40
CO ₂ Concentration, %	0.0	0.0	0.0	0.0
O ₂ Concentration, %	20.1	20.0	20.3	20.1
VFR, x 10 ⁴ dscfm	2.60	2.61	2.54	2.58
Hydrogen Sulfide				
Concentration, ppm	6.05	7.61	7.00	6.88
Emission Rate, lb/hr	0.84	1.05	0.94	0.94
Total Reduced Sulfur				
Concentration, ppm	7.42	9.24	8.24	8.30
Emission Rate, lb/hr	1.02	1.28	1.11	1.14

TABLE 2-11
NO. 1 COMBINATION BOILER
CONDITION 1: NCG AND SOG GASES
SUMMARY OF H₂S, TOTAL TRS, AND SO₂ EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/23/21	6/23/21	6/23/21	----
Time Began	1158	1400	1541	----
Time Ended	1258	1500	1641	----
Stack Gas Data				
Temperature, °F	415	418	415	416
Velocity, ft/sec	59	57	57	57
Moisture, %	17	18	16	17
CO ₂ Concentration, %	7.8	8.4	7.7	8.0
O ₂ Concentration, %	12.1	11.4	12.0	11.8
VFR, x 10 ⁵ dscfm	1.35	1.31	1.33	1.33
Hydrogen Sulfide				
Concentration, ppm	0.09	0.08	0.12	0.10
Emission Rate, lb/hr	0.07	0.06	0.08	0.07
Total Reduced Sulfur				
Concentration, ppm	1.09	1.07	1.03	1.06
Emission Rate, lb/hr	0.78	0.74	0.73	0.75
Sulfur Dioxide				
Concentration, ppm	195	278	344	272
Emission Rate, lb/hr	262.7	362.5	457.4	360.9

TABLE 2-12
NO. 1 COMBINATION BOILER
CONDITION 2: NCG GASES ONLY
SUMMARY OF H₂S, TOTAL TRS, AND SO₂ EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/23/21	6/23/21	6/23/21	----
Time Began	1824	2019	2202	----
Time Ended	1924	2119	2302	----
Stack Gas Data				
Temperature, °F	416	411	415	414
Velocity, ft/sec	56	56	56	56
Moisture, %	16	16	17	17
CO ₂ Concentration, %	8.3	7.8	8.1	8.1
O ₂ Concentration, %	11.4	11.9	11.6	11.6
VFR, x 10 ⁵ dscfm	1.30	1.31	1.30	1.30
Hydrogen Sulfide				
Concentration, ppm	0.08	0.08	0.08	0.08
Emission Rate, lb/hr	0.05	0.05	0.05	0.05
Total Reduced Sulfur				
Concentration, ppm	0.97	0.98	0.99	0.98
Emission Rate, lb/hr	0.67	0.68	0.68	0.68
Sulfur Dioxide				
Concentration, ppm	313	348	349	337
Emission Rate, lb/hr	404.4	452.9	450.8	436.1

TABLE 2-13
No. 2 COMBINATION BOILER
CONDITION 1: NCG AND SOG GASES
SUMMARY OF H₂S, TOTAL TRS, AND SO₂ EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	----
Time Began	1445	1630	1806	----
Time Ended	1545	1730	1906	----
Stack Gas Data				
Temperature, °F	475	474	479	476
Velocity, ft/sec	69	69	69	69
Moisture, %	14	14	15	14
CO ₂ Concentration, %	6.6	6.9	7.3	6.9
O ₂ Concentration, %	13.1	12.7	12.3	12.7
VFR, x 10 ⁵ dscfm	1.57	1.56	1.54	1.56
Hydrogen Sulfide				
Concentration, ppm	0.09	0.09	0.09	0.09
Emission Rate, lb/hr	0.07	0.07	0.07	0.07
Total Reduced Sulfur				
Concentration, ppm	1.13	0.97	0.97	1.02
Emission Rate, lb/hr	0.94	0.80	0.80	0.85
Sulfur Dioxide				
Concentration, ppm	324	327	322	324
Emission Rate, lb/hr	508.7	507.2	496.1	504.0

TABLE 2-14
No. 2 COMBINATION BOILER
CONDITION 2: NCG GASES ONLY
SUMMARY OF H₂S, TOTAL TRS, AND SO₂ EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	----
Time Began	1000	1135	1315	----
Time Ended	1100	1235	1415	----
Stack Gas Data				
Temperature, °F	468	470	481	473
Velocity, ft/sec	68	69	69	69
Moisture, %	14	14	14	14
CO ₂ Concentration, %	6.9	6.8	7.3	7.0
O ₂ Concentration, %	12.8	12.7	12.3	12.6
VFR, x 10 ⁵ dscfm	1.56	1.55	1.56	1.56
Hydrogen Sulfide				
Concentration, ppm	0.05	0.05	0.05	0.05
Emission Rate, lb/hr	0.04	0.04	0.04	0.04
Total Reduced Sulfur				
Concentration, ppm	1.22	1.18	0.94	1.11
Emission Rate, lb/hr	1.01	0.97	0.78	0.92
Sulfur Dioxide				
Concentration, ppm	247	245	235	242
Emission Rate, lb/hr	383.2	380.0	366.2	376.4

TABLE 2-15
PAPER MACHINE 3 WHITEWATER (SAMPLE ID: 3A)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/24/21	10:00	200,000	740	ND	ND	ND
6/24/21	11:15	210,000	700	ND	ND	ND
6/24/21	11:15 (Duplicate)	190,000	840	310	ND	680
6/24/21	12:10	170,000	640	ND	ND	ND
6/24/21	13:31	160,000	540	ND	ND	ND
6/24/21	14:50	170,000	560	ND	ND	ND
6/24/21	16:00	190,000	830	360	ND	710
6/25/21	08:17	190,000	790	ND	ND	ND
6/25/21	09:24	130,000	560	170	ND	ND
6/25/21	10:30	150,000	710	170	ND	ND
6/25/21	12:00	130,000	620	340	ND	550
6/25/21	12:55	140,000	730	180	ND	ND
6/25/21	14:03	180,000	1,200	400	ND	840
6/25/21	16:30	160,000	1,300	ND	ND	430
6/25/21	17:40	170,000	1,300	ND	ND	250
6/25/21	18:45	140,000	1,300	ND	ND	ND
6/26/21	10:10	90,000	1,100	420	ND	710
6/26/21	11:25	75,000	1,700	180	ND	170
6/26/21	12:30	59,000	2,000	170	ND	ND
6/26/21	14:00	42,000	1,500	150	ND	170
6/26/21	14:45	37,000	1,500	ND	ND	120
6/26/21	15:50	41,000	1,700	190	22	81

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.

TABLE 2-16
PULP DRYER WATER (SAMPLE ID: 3B)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/26/21	13:05	9.4	7.7	37	ND	11
6/26/21	14:15	7.7	5.8	42	ND	15
6/26/21	15:30	5.4	5.9	47	ND	17

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.

TABLE 2-17
STEAM STRIPPER INLET FOUL CONDENSATE (SAMPLE ID: 2A)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/24/21	15:10	130,000	14,000	16,000	ND	13,000
6/24/21	15:10 Duplicate	140,000	14,000	16,000	ND	17,000
6/24/21	17:00	140,000	17,000	18,000	ND	14,000
6/24/21	18:45	150,000	19,000	18,000	ND	16,000
6/25/21	10:35	130,000	12,000	12,000	ND	11,000
6/25/21	12:05	120,000	10,000	12,000	ND	9,600
6/25/21	13:45	190,000	22,000	22,000	ND	23,000

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.

TABLE 2-18
STEAM STRIPPER OUT (SAMPLE ID: 2B)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/24/21	15:15	5,000	200	2,800	ND	4,100
6/24/21	15:15 Duplicate	3,200	94	3,000	ND	4,400
6/24/21	17:05	7,100	540	2,900	ND	3,900
6/24/21	18:50	8,100	760	3,000	ND	4,100
6/25/21	10:40	3,300	100	2,400	ND	3,600
6/25/21	12:10	550	4.8	1,900	2.0	3,000
6/25/21	13:50	3,500	260	2,500	ND	4,300

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.



SECTION 3

SOURCE TESTING METHODOLOGY

The emission testing program was conducted in accordance with the U.S. EPA Reference Methods summarized in Table 3-1. Method descriptions and quality assurance data are provided in the referenced appendices.

TABLE 3-1
SOURCE TESTING METHODOLOGY

Parameter	Method Number	Appendix Reference		Comments
		Method Description	Quality Control Data	
Volumetric Flow Rate	1,2,4	B.1	H	Instrumental See Note
Gas Composition	3A	B.2	H	
Gas Composition (Bags)	3A	B.3	H	
Total Reduced Sulfur	16	B.4	H	
Sulfur Dioxide	6C	B.5	H	

Note: Oxygen (O₂) and carbon dioxide (CO₂) concentrations for the Pulp Dryer, No. 3 Paper Machine Vents, and the No. 2 and 3 SDTVs were determined from integrated bag samples collected concurrently with the TRS sampling. These samples were analyzed instrumentally using an analyzer calibrated according to the procedures of Method 3A.

These results meet all requirements of TNI unless otherwise specified.

The results within this report relate only to the samples listed in the body of this report.

4.1 QUALITY CONTROL PROCEDURES

As part of all testing, WESTON implements a QA/QC program. The field team leader is responsible for implementation of field QA/QC procedures. Individual laboratory managers are responsible for implementation of analytical QA/QC procedures. The overall project manager and the Quality Assurance Manager oversee all QA/QC procedures to ensure that sampling and analyses meet the QA/QC requirements and that accurate data results are generated from the test program.

4.2 GAS STREAM SAMPLING QA/QC PROCEDURES

General checks that are conducted during testing and apply to all methods include the following:

- Performance of leak checks.
- Use of standardized forms, labels, and checklists.
- Maintenance of sample traceability.
- Collection of appropriate blanks.
- Use of calibrated instrumentation.
- Review of data sheets in the field to verify completeness.
- Use of validated spreadsheets for calculation of results.

The following section details the specific procedures applied to the reference method sampling system.

Instrumental Reference Method Sampling Systems

- The sampling system (probe to sample conditioner) is leak-checked prior to the testing.
- All analyzers are calibrated prior to testing to ensure precise and accurate data. Protocol standards are used to calibrate each of the analyzers. Each analyzer is calibrated at three to four points (zero, low, mid, and high range) depending on reference method requirements. Nitrogen or hydrocarbon-free air is used to set the instrument zero. The CO₂ and O₂ calibration standards are 40 to 60 and 100% of span.
- Pre- and post-test calibration bias and calibration drift tests are performed for each test run. The bias check is performed with the calibration standard that is closest to the observed concentration in the sample gas. The average pretest/posttest bias did not exceed 5% of full scale. The calibration drift did not exceed 3%.

- Prior to formal testing, a 12-point stratification check is performed at the test location. Alternatively, per Section 8.1.2 of EPA Method 7E, a three-point stratification check passing through the centroidal area of the stack is performed. The three points (16.7, 50, and 83.3% of the stack diameter) are sampled a minimum of two times the system response.
- A response time check is performed before sampling. Sample flow rate must be maintained within 10% of the flow rate at which the system response time was measured.
- A permanent data record of analyzer responses is recorded using computer software designed by WESTON.

4.3 QA/QC CHECKS FOR DATA REDUCTION AND VALIDATION

All data and/or calculations for flow rates and moisture contents, which are made using a computer software program, are validated by an independent check. In addition, all calculations are spot checked for accuracy and completeness by the Field Team Manager.

In general, all measurement data are validated based on the following criteria:

- Process conditions during sampling or testing.
- Acceptable sample collection procedures.
- Consistency with expected or other results.
- Adherence to prescribed QC procedures.

Any suspect data are flagged and identified with respect to the nature of the problem and potential effect on the data quality.

Upon completion of testing, the Field Team Manager is responsible for preparation of a complete data summary including calculation results, raw data sheets, and laboratory reports.



APPENDIX A SAMPLE CALCULATIONS

SAMPLE CALCULATIONS**No. 3 Paper Machine Vent 1
Run No. 1****Meter Pressure (Pm), in. Hg**

$$P_m = P_b + \frac{\Delta H}{13.6 \text{ in. H}_2\text{O/in. Hg}}$$

where, P_b = barometric pressure, in. Hg
 ΔH = Pressure differential of orifice in. H₂O

$$P_m = 29.68 \text{ in. Hg} + \frac{1.300 \text{ in. H}_2\text{O}}{13.6 \text{ in. H}_2\text{O/in. Hg}} = 29.78 \text{ in. Hg}$$

Absolute Stack Gas Pressure (Ps), in. Hg

$$P_s = P_b + \frac{P_g}{13.6 \text{ in. H}_2\text{O/in. Hg}}$$

where, P_b = barometric pressure, in. Hg
 P_g = Static Pressure, in. H₂O

$$P_s = 29.68 \text{ in. Hg} + \frac{-0.65 \text{ in. H}_2\text{O}}{13.6 \text{ in. H}_2\text{O/in. Hg}} = 29.63 \text{ in. Hg}$$

Standard Meter Volume (Vmstd), dscf

$$V_{mstd} = \frac{17.64^\circ\text{R/in. Hg} \times Y \times V_m \times P_m}{T_m}$$

where, Y = meter correction factor
 V_m = meter volume, dscf
 P_m = meter pressure, in. Hg
 T_m = meter temperature, °R

$$V_{mstd} = \frac{17.64^\circ\text{R/in. Hg} \times 1.003 \times 29.740 \text{ dscf} \times 29.78 \text{ in. Hg}}{522.2^\circ\text{R}} = 30.003 \text{ dscf}$$

Standard Wet Volume (Vwstd), scf

$$V_{wstd} = 0.04707 \text{ ft}^3/\text{mL} \times V_{lc}$$

where, V_{lc} = volume of H₂O collected, mL

$$V_{wstd} = 0.04707 \text{ ft}^3/\text{mL} \times 147.7 \text{ mL} = 6.952 \text{ scf}$$

Moisture Fraction (Measured), (Bws)

$$Bws = \frac{V_{wstd}}{(V_{wstd} + V_{mstd})} = \frac{6.952 \text{ scf}}{6.952 \text{ scf} + 30.003 \text{ dscf}} = 0.188$$

where, V_{wstd} = standard wet volume, scf
 V_{mstd} = standard meter volume, dscf

Moisture %, (Bws %)

$$Bws = Bws \times 100 = 0.188 \times 100 = 18.8$$

where, Bws = moisture fraction, measured or at saturation,
 whichever is lowest

Molecular Weight (DRY) (Md), lb/lb-mole

$$Md = (0.44 \times \% \text{CO}_2) + (0.32 \times \% \text{O}_2) + (0.28 (100 - \% \text{CO}_2 - \% \text{O}_2))$$

$$Md = (0.44 \times 0.2) + (0.32 \times 20.2) + (0.28 (100 - 0.2 - 20.2)) = 28.84 \text{ lb/lb-mole}$$

Molecular Weight (WET) (Ms), lb/lb-mole

$$Ms = Md (1 - Bws) + 18 (Bws)$$

where, Md = molecular weight (DRY), lb/lb-mole
 Bws = moisture fraction, dimensionless

$$Ms = 28.84 \text{ lb/lb-mole} (1 - 0.188) + 18 (0.188) = 26.80 \text{ lb/lb-mole}$$

Average Velocity (Vs), ft/sec

$$Vs = 85.49 \frac{\text{ft}}{\text{sec}} \sqrt{\frac{(\text{lb/lb-mole}) (\text{in. Hg})}{(^{\circ}\text{R})(\text{in. H}_2\text{O})}} \times Cp \times \sqrt{\Delta P \text{ avg.}} \times \sqrt{\frac{Ts}{Ps \times Ms}}$$

where, Cp = pitot tube coefficient
 ΔP = velocity head of stack gas, in. H_2O
 Ts = absolute stack temperature, $^{\circ}\text{R}$
 Ps = absolute stack gas pressure, in. Hg
 Ms = molecular weight of stack gas, lb/lb-mole

$$Vs = 85.49 \frac{\text{ft}}{\text{sec}} \sqrt{\frac{(\text{lb/lb-mole}) (\text{in. Hg})}{(^{\circ}\text{R})(\text{in. H}_2\text{O})}} \times 0.84 \times 0.993 \text{ in. H}_2\text{O} \times \sqrt{\frac{631.2 \text{ } ^{\circ}\text{R}}{29.63 \text{ in. Hg} \times 26.80 \text{ lb/lb-mole}}}$$

$$Vs = 63.60 \text{ ft/sec}$$

Average Stack Gas Flow at Stack Conditions (Qa), acfm

$$Qa = 60 \text{ sec/min} \times Vs \times As \quad \text{where, } Vs = \text{stack gas velocity, ft/sec}$$

$$As = \text{cross-sectional area of stack, ft}^2$$

$$Qa = 60 \text{ sec/min} \times 63.60 \text{ ft/sec} \times 13.64 \text{ ft}^2 = 5.20 \text{ E}+4 \text{ acfm}$$

Average Stack Gas Flow at Standard Conditions (Qs), dscfm

$$Qs = 17.64 \frac{^{\circ}R}{\text{in. Hg}} \times Qa \times (1 - Bws) \times \frac{Ps}{Ts}$$

where, Qa = average stack gas flow at stack conditions, ft³/min
 Bws = moisture content (dimensionless)
 Ps = absolute stack gas pressure, in. Hg
 Ts = absolute stack temperature, °R

$$Qs = 17.64 \frac{^{\circ}R}{\text{in. Hg}} \times 5.20 \text{ E}+4 \frac{\text{acf}}{\text{min}} \times (1 - 0.188) \times \frac{29.63 \text{ in. Hg}}{631.2 ^{\circ}R} = 3.50 \text{ E}+4 \text{ dscfm}$$

Total Reduced Sulfur Emission Rate (EMR), lb/hr

$$EMR = \frac{TRS \text{ conc.} \times MW \times Qs \frac{\text{dscf}}{\text{min}} \times 60 \frac{\text{min}}{\text{hr}} \times 28.32 \frac{\text{L}}{\text{dscf}}}{24.04 \frac{\text{L}}{\text{g-mole}} \times 1.0 \times 10^6 \frac{\mu\text{L}}{\text{L}} \times 454 \frac{\text{g}}{\text{lb}}}$$

where, MW = molecular weight of TRS, 34.08 g/g-mole
 Qs = stack gas flow at standard conditions, dscfm

$$EMR = \frac{0.57 \text{ ppm} \times 34.08 \frac{\text{g}}{\text{g-mole}} \times 3.50 \text{ E}+4 \frac{\text{dscf}}{\text{min}} \times 60 \frac{\text{min}}{\text{hr}} \times 28.32 \frac{\text{L}}{\text{dscf}}}{24.04 \frac{\text{L}}{\text{g-mole}} \times 1.0 \times 10^6 \frac{\mu\text{L}}{\text{L}} \times 454 \frac{\text{g}}{\text{lb}}} = 0.11 \text{ lb/hr}$$

Note: Sulfur dioxide was calculated using the same equation as presented for TRS, substituting molecular weight.



APPENDIX B TEST METHODOLOGY

- B.1 VOLUMETRIC FLOW RATE**
- B.2 GAS COMPOSITION**
- B.3 GAS COMPOSITIONS (BAGS)**
- B.4 TOTAL REDUCED SULFUR**
- B.5 SULFUR DIOXIDE**

B.1 VOLUMETRIC FLOW RATE

Mass emission rates are calculated by multiplying measured target analyte concentrations by calculated volumetric flow rates. Volumetric flow rates are determined using measurement data obtained by EPA Reference Methods 1-4.

The ductwork is measured at the sample location to the nearest 0.25 inch using a steel tape measure. Traverse points are selected in accordance with EPA Reference Method 1 on the basis of ductwork dimensions, geometry, and upstream and downstream disturbances. When a sample location does not meet EPA Reference Method 1 criteria, the maximum recommended number of traverse points are used.

Gas Velocity

The velocity of the gas stream is measured in accordance with EPA Reference Method 2 by reading the instantaneous velocity pressure at each traverse point using an “S” type pitot tube and a leveled, inclined manometer with a scale of 0 to 10 inches. In rare cases of highly negative pressure sources, a Magnahelic gauge with scales of 0 to 5 or 0 to 25 inches of water may be used in place of an inclined manometer. The stack pressure is calculated from the measured static pressure of the stack and the ambient barometric pressure corrected for elevation when applicable. The static pressure is measured by using the static side of the pitot tube, and the barometric pressure is measured using a calibrated aneroid barometer. The stack temperature is measured at each traverse point with a calibrated thermocouple and pyrometer.

Gas Composition and Moisture Content

The composition of the gas stream will be measured in accordance with EPA Reference Method 3 and/or 3A using an Orsat analyzer or Paramagnetic O₂ and Infrared CO₂ analyzers using Protocol-1 gases. Gas composition determinations are conducted using integrated sampling techniques.

Integrated samples are collected by withdrawing a sample from the M5 sampling train into a Tedlar sample bag.

The moisture content of the gas stream is determined according to EPA Reference Method 4, by collecting an integrated sample of source gas from a single point on the gas stream. At the conclusion of each run the volume of condensed moisture collected in the impingers of the sampling train is measured and used to evaluate the moisture content of the gas stream.

When sources are saturated or contain entrained water droplets, moisture content is also determined using the temperature measured at each traverse point and psychrometric chart values corrected for stack pressure or by use of saturation vapor pressure tables. In these conditions, the lower moisture of the measured and saturation based values is used for volumetric flow rate calculations.

The molecular weight of the gas stream is calculated using the determined moisture, oxygen, and carbon dioxide concentrations. The balance of the gas stream is assumed to be nitrogen. The volumetric flow is then calculated at stack and standard conditions using the calculated molecular weight, the measured stack temperature, and measured velocity, stack and barometric pressures. Standard conditions are 68 °F and 29.92 inches of mercury and 0% moisture.

Data Acquisition and Reporting

Data are recorded at the time of collection on preprinted data sheets. Calculations are performed (where possible) with preprogrammed calculators or spreadsheet software.

Quality Control

Quality control procedures for volumetric flow measurements involve leak checks of pitot tubes, pitot tube lines and manometers; calibration of gas metering systems; and periodic calibration checks of thermocouples and pyrometers. Magnahelics are verified against inclined manometers prior to each use.

Data transfers are minimized. Data sheets are checked for completeness and accuracy. Calculations are verified by a second person.

B.2 GAS COMPOSITION (INSTRUMENTAL)

Oxygen (O₂) and carbon dioxide (CO₂) testing is conducted in accordance with EPA Reference Method 3A.

Sampling Equipment and Procedures

Figure B-1 illustrates the sampling system. The sample is withdrawn continuously from the source through a heated probe, filter, and sample line to a sample conditioner which removes moisture from the gas stream. The sample is then transported to a Paramagnetic O₂ analyzer and an Infrared CO₂ analyzer.

Sample Analysis

The O₂ analyzer uses an electrochemical cell or a paramagnetic detector, and the CO₂ analyzer uses a non-dispersive infra-red (NDIR) detector to produce an electrical signal which is linearly proportional to the O₂ and CO₂ concentration, respectively.

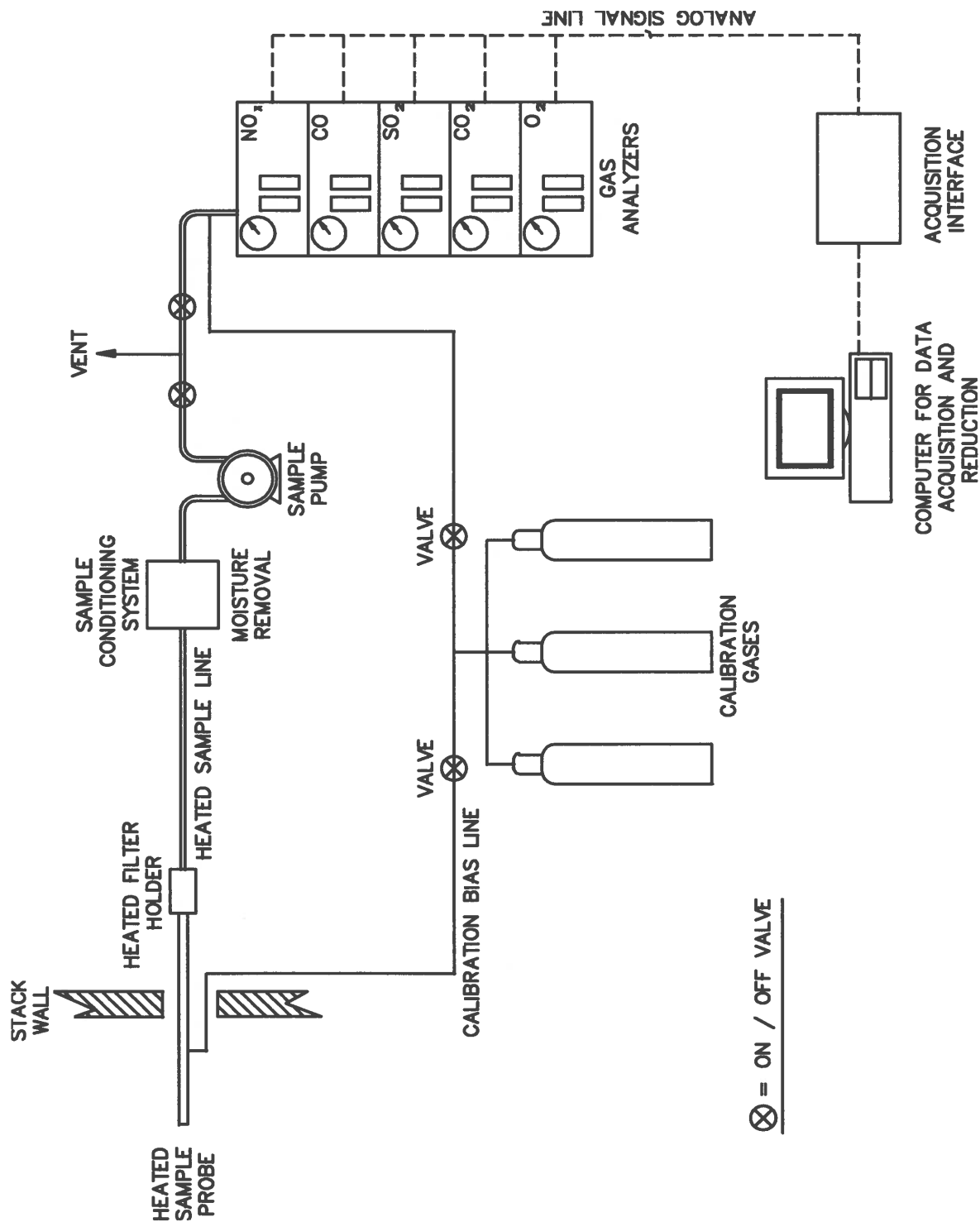


Figure B-1 Continuous Emission Monitoring System

Data Acquisition and Reduction

Data are acquired electronically using a computer with software designed by WESTON for EPA Reference Method 3A analysis. This system generates a calibration curve, converts electronic signals into concentrations, and provides one-minute averages during the sample run and an average concentration over the duration of the sample run.

Quality Control

At the time of analysis, O₂ and CO₂ in nitrogen calibration gases certified according to EPA Protocol-1, are used to calibrate the analyzer and to determine a bias correction factor for the entire system bias in accordance with EPA Reference Method 3A. The calibration gases are introduced directly to the analyzer to generate the calibration curve. A zero gas and an upscale calibration gas are introduced at the probe and recovered through the sampling and analytical system. A bias correction factor is calculated using the ratio of the concentration measured from the sampling system and concentration measured directly at the analyzer. Sample run averages are corrected for system bias results.

B.3 GAS COMPOSITION (BAGS WITH INSTRUMENTAL ANALYSIS)

Oxygen (O₂) and carbon dioxide (CO₂) measurement is conducted by collecting integrated samples in Tedlar[®] gas-sampling bags collected according to the procedures specified in EPA Reference Method 3. The samples are analyzed on equipment operated and calibrated according to EPA Reference Method 3A.

Sampling Equipment and Procedures

Samples of the source gas are collected in Tedlar[®] gas-sampling bags. The gas is sampled at a constant flow rate over the duration of a test run at each traverse point. The flow rate is set to a value which results in a sample volume that is adequate for analysis without overfilling the bag. The sample passes through a moisture condenser before entering the bag.

Sample Analysis

Analysis of the sample is performed by attaching the bag directly to the inlets of electronic O₂ and CO₂ analyzers. These analyzers are calibrated before analysis using the procedures described in Method 3A. At least three data points are recorded for each sample, and the sample concentration is taken as the average of these values.

The oxygen analyzer uses a paramagnetic detector. This device exploits magnetic properties unique to O₂ to produce an electrical signal that is linearly proportional to the concentration of the gas.

The carbon dioxide analyzer uses non-dispersive infrared (NDIR) technology. The sample gas is passed through a chamber through which is passed infrared light of a wavelength that is specific to CO₂. The CO₂ in the gas absorbs light of this wavelength to a degree that is proportional to the CO₂ concentration. The electronics in the analyzer measure the absorption of the light and produce a signal that is linearly proportional to the gas concentration.

Data Acquisition and Reduction

The electrical outputs of the analyzers are connected to an analog-to-digital (A/D) conversion device installed in a Windows®-based computer running software designed by WESTON for analysis by Method 3A and similar EPA Methods.

The software reads the values presented by the A/D device at one-second intervals and periodically records averages of these readings. The software also handles calibrations and the generation of calibration curves and performs all calculations, including the determination of gas concentrations from the recorded inputs.

Quality Control

The bags and the equipment used to fill the bags are checked for leaks before sampling begins. Bags are analyzed as soon as possible after sample collection and are not held for more than 8 hours before analysis.

The analyzers are calibrated prior to analysis using gas mixtures certified by their manufacturer according to EPA Protocol 1. For calibration, the gases are introduced directly to the analyzers.

B.4 TOTAL REDUCED SULFUR

Total reduced sulfur testing is performed using the procedures described in EPA Reference Method 16. When TRS data must be oxygen corrected, EPA Reference Method 3A using a calibrated O₂ analyzer, is performed on an integrated bag sample to measure oxygen concentration.

Sampling Equipment and Procedures

Figure B-2 illustrates the sampling system. A Teflon®-lined, stainless steel probe of sufficient length to monitor the gas stream (without wall effects) is used to extract a gas sample from the emission source. The probe tip is directed away from stack gas flow to minimize particulate and moisture entrainment. The probe is connected directly to the recovery gas line and sample conditioning system.

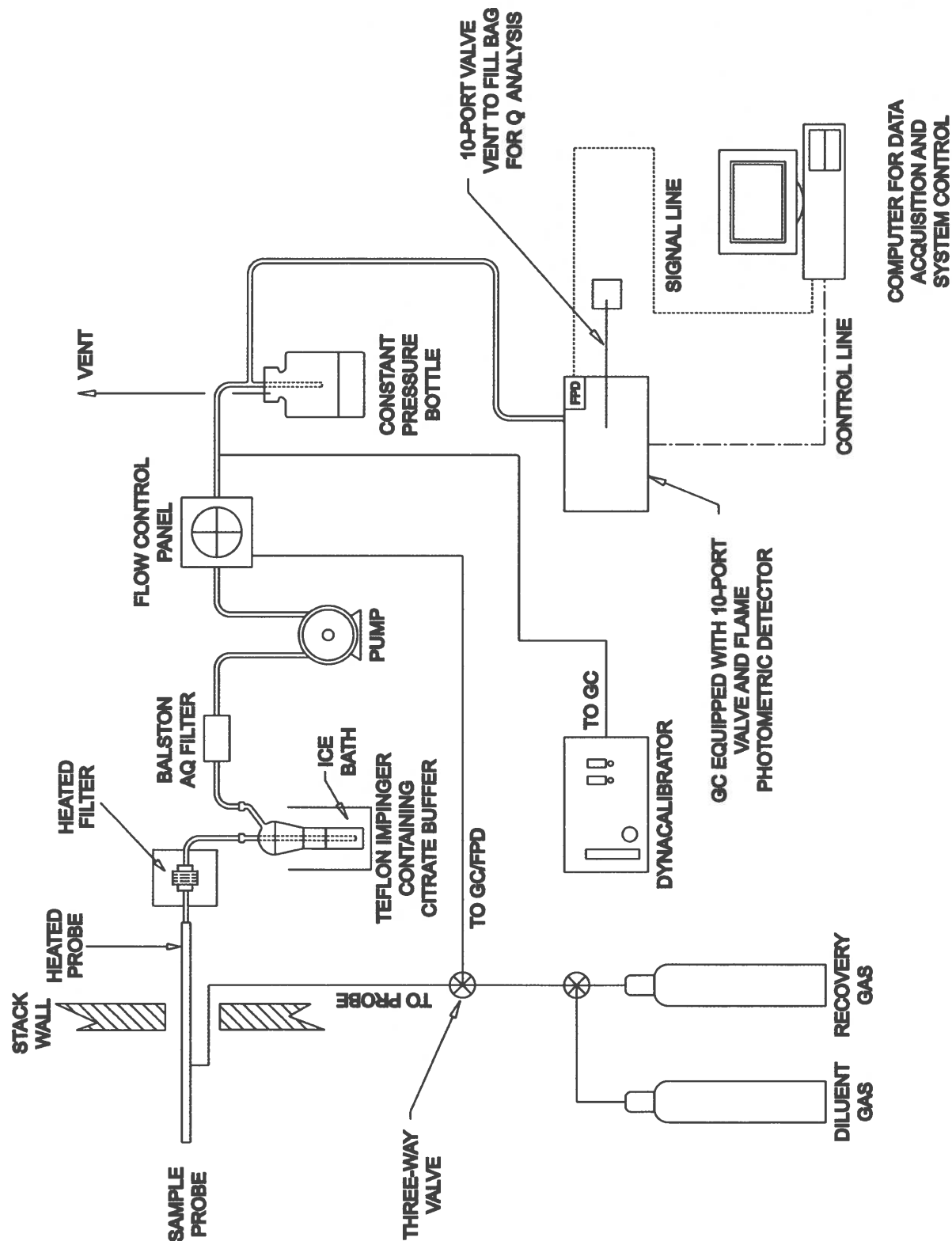


Figure B-2 EPA Reference Method 16 Sampling and Analytical Train

The sample conditioning system consists of a Teflon® impinger containing 1.5M citrate buffer, adjusted to a pH of 5.4 to 5.6, maintained in an ice bath. Moisture is condensed in the impingers, yielding a dry sample and thus eliminating the need for heated sample lines. Even though the impinger set traps entrained particulate matter, very fine particulate matter is removed by a Balston® AQ Microfiber filter installed at the impinger outlet.

An unheated nylon line is connected from the filter to the sample pump inlet. Sample line length and connections are minimized to reduce surface adsorption of TRS and the possibility of leaks.

The pump outlet is connected directly to a constant pressure bottle. At this point, a major portion of the sample is vented to the atmosphere, and the remainder is used to charge the gas chromatograph (GC) sample loop. The GC sample loop outlet is connected to a Tedlar® gas collection bag gas sample collection and subsequent analysis using a calibrated O₂ analyzer.

Sample Analysis

Separation of hydrogen sulfide (H₂S), methyl mercaptan (MeSH), dimethyl sulfide (DMS), and dimethyl disulfide (DMDS) is accomplished by gas chromatography using a column suitable for separating these compounds. After resolution of H₂S, MeSH, and DMS, the column is backflushed to achieve resolution of DMDS within 2-3 minutes from sample injection. The gas chromatograph is operated on periodic cycle to produce a minimum of 20 injections per hour.

Detection of reduced sulfur compounds is accomplished with a flame photometric detector (FPD). The FPD response is calibrated before and after testing using gas phase standards prepared from gravimetrically certified permeation devices.

Data Acquisition and Reduction

The FPD responses are recorded by a computer equipped with software designed by WESTON for reduced sulfur compound analysis. The software controls the timing of the gas-chromatographic cycle, integrates and records peaks, performs calculations, and prints the results. Calibration curves are generated by the software using log-log linear least squares best fit of the data.

Quality Control

Permeation devices certified by the vendor are used to calibrate the FPD response. They are kept in a permeation chamber that is maintained at a constant temperature of 50° ± 1°C, the temperature at which the vendor certified the permeation rates. This assures that the actual permeation rates are the same as the certified rates. This temperature is verified at the time of sampling using a National Institute of Standards and Technology (NIST) traceable mercury-in-glass thermometer.

VICI-Metronics, Santa Clara, California, supplied the permeation devices for the testing. The devices are gravimetrically analyzed to measure the emission rate before shipment.

Various concentrations of the permeants are generated by varying the flow of the diluent gas stream over the devices. A calibration curve is constructed of at least three concentrations of each permeant; three successive injections at each concentration yield peak areas that differ from the mean peak area value by less than 5%.

Sampling system integrity is evaluated after every three hours of sampling by injecting a known concentration of H₂S at the probe tip and recovering the sample through the sample conditioning and sample transport subsystems. The same gas stream is then introduced directly to the GC sample loop. The ratio of concentrations corresponds to the system correction factor. This factor is then used to adjust measured reduced sulfur compound concentrations.

A system audit gas (of appropriate H₂S concentration) is used to evaluate the analytical system integrity each test day.

B.5 SULFUR DIOXIDE (INSTRUMENTAL)

Sulfur dioxide (SO₂) testing is conducted in accordance with EPA Reference Method 6C.

Sampling Equipment and Procedures

Figure B-1 illustrates the sampling system. The sample is withdrawn from the source through a heated probe, heated filter, and heated sample line to a sample conditioner which removes moisture from the gas stream. The sample is then transported to the analyzer through a Teflon® line.

Sample Analysis

The analyzer measures, at two discrete wavelengths, the absorption of ultraviolet radiation by the gas sample. The concentration of the components absorbing the light are then determined from relationships developed through application of the ideal gas law in concert with the laws of Bouguer, Beer, and Lambert.

Data Acquisition and Reduction

Data are acquired electronically using a computer with software designed by WESTON for EPA Reference Method 6C analysis. This system generates a calibration curve, converts electronic signals into concentrations, and provides bias-corrected averages.

Quality Control

At the time of analysis, SO₂ in nitrogen calibration gases (certified according to EPA Protocol-1) are used to calibrate the analyzer and to determine a bias correction factor for the entire system in accordance with EPA Reference Method 6C.

Calibration gases are introduced directly to the analyzer to generate the calibration curve. Zero level and upscale calibration gases are introduced at the probe and recovered through the sampling and analytical system. A bias correction factor is then calculated using the ratio of the measured concentration of the bias gas introduced through the sampling system and the measured concentration of the bias gas introduced directly to the analyzer. Run averages are adjusted for this bias correction factor.



APPENDIX C

FIELD DATA – PULP DRYER

New Indy
Catawba, SC

15730.001.008
Pulp Dryer

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/26/21 ✓	6/26/21 ✓	6/26/21 ✓	---
Time Began	1230	1347	1506	---
Time Ended	1339	1454	1611	---
Volumetric Flow Rate, (Qs), DSCFM	3.93E+04 ✓	3.90E+04 ✓	3.97E+04 ✓	3.93E+04
BWS	0.078 ✓	0.106 ✓	0.092 ✓	0.092
% Oxygen	20.8 ✓	20.9 ✓	20.9 ✓	20.9
Recovery, %	96.6 ✓	96.6 ✓	96.6 ✓	96.6
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	1.18 ✓	1.09 ✓	1.06 ✓	1.11
Emission Rate, lb/hr	0.25	0.23	0.22	0.23
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.09 ✓	0.08 ✓	0.07 ✓	0.08
Concentration, ppm (Corrected for Recovery)	0.09	0.08	0.07	0.08
Emission Rate, lb/hr	0.02	0.02	0.02	0.02

AM

New Indy
Catawba, SC

15730.001.008
Pulp Dryer

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/26/21 ✓	6/26/21	6/26/21	---
Time Began	1230 ✓	1347 ✓	1506 ✓	---
Time Ended	1341 ✓	1455 ✓	1614 ✓	---

INPUT DATA

Sampling Time, min	(Theta)	64.0 ✓	64	64	64
Stack Diameter, in.	(Dia.)	60 ✓	60	60	60
Barometric Pressure, in. Hg	(Pb)	29.70 ✓	29.70	29.70	29.70
Static Pressure, in. H2O	(Pg)	-0.27 ✓	-0.27	-0.27	-0.27
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84	0.84	0.84
Meter Correction Factor	(Y)	0.9880 ✓	0.9880	0.9880	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 ✓	1.7320	1.7320	1.7320
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250	0.250	0.250
Meter Volume, ft ³	(Vm)	42.959 ✓	43.492 ✓	43.845 ✓	43.432
Meter Temperature, °F	(Tm)	86.8 ✓	92.3 ✓	93.6 ✓	90.9
Meter Temperature, °R	(Tm-R)	546.8	552.3	553.6	550.9
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2})avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	73.0 ✓	102.8 ✓	88.4 ✓	88.1
CO2 Concentration, %	(CO2)	0.0 ✓	0.0 ✓	0.0 ✓	0.0
O2 Concentration, %	(O2)	20.8 ✓	20.9 ✓	20.9 ✓	20.9
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2})avg)	0.689 ✓	0.702 ✓	0.705 ✓	0.699
Stack Temperature, °F	(Ts)	157.8 ✓	158.8 ✓	157.8 ✓	158.1
Stack Temperature, °R	(Ts-R)	617.8	618.8	617.8	618.1
Moisture Fraction (at Saturation)	(BWS)	0.309	0.316	0.309	0.311

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	19.63 ✓	19.63	19.63	19.63
Stack Pressure, in. Hg	(Ps)	29.68	29.68	29.68	29.68
Meter Pressure, in. Hg	(Pm)	29.80	29.80	29.80	29.80
Standard Meter Volume, ft ³	(Vmstd)	40.797	40.896	41.130	40.941
Standard Water Volume, ft ³	(Vwstd)	3.436	4.839	4.161	4.145
Moisture Fraction (Measured)	(BWS)	0.078	0.106	0.092	0.092
Moisture Fraction (lower sat/meas)	(BWS)	0.078	0.106	0.092	0.092
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.83	28.84	28.84	28.83
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.99	27.69	27.84	27.84
Average Stack Gas Velocity, ft/sec	(Vs)	42.65	43.74	43.78	43.39
Stack Gas Flow, actual, ft ³ /min	(Qa)	50245	51527	51580	51118
Stack Gas Flow, Std , ft ³ /min	(Qs)	39272	38983	39695	39317
Calibration check	(Yqa)	0.9904	0.9831	0.9763	0.983
Percent difference from Y					-0.48%

5/4

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Ind
 Location/Plant Catawba, SC
 Source Pulp Dryer
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/26/21
 Test Personnel AR/UC
 Sample Time 64 min.

Console ID A610
 Meter Corr., Y 1.988
 Console ΔH@ 1.133
 Probe ID/Length PR5B 3'
 Liner Material SS
 Pitot ID/Coeff. P172 0.84
 Thermo ID A010
 Nozzle ID/Diams. 250 1.250
 Avg. Nozzle Diam. 1.250 in.

Ambient Temp. 85 °F
 Baro. Pressure* 29.70 in. Hg
 Static Pressure -2.77 in. H₂O
 Impinger Gain 64.7 mL
 Silica Gel Gain 8.3 g
 Stack Area 14.63 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	1.000	1.000
Pitot	8	3
	100.0	100.0

Filter ID 1VA
 Sample ID R444

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	12:30			352.466									
	4		.42	1.3	355.1	156		83	237	241		67	2.5	
	8		.43	1.3	357.7	156		83	238	253		66	2.5	
	12		.45	1.3	360.361.0	156		84	245	253		65	2.5	
	16		.48	1.3	363.2	158		84	252	254		64	2.5	*Purge
	20		.53	1.3	365.7	158		85	253	254		64	2.5	12:40-12:40
	24		.51	1.3	368.2	163		86	244	254		65	2.5	
	28		.50	1.3	371.0	161		86	250	251		64	2.5	
	32	13:06	.48	1.3	373.7	159		86	249	252		63	2.5	
B-1	36	13:09	.52	1.3	376.5	155		86	250	253		65	3	
	40		.53	1.3	374.4	156		87	248	253		64	3	
	44		.44	1.3	391.8	156		88	249	252		65	3	
	48		.50	1.3	384.6	157		86	245	253		66	3	
	52		.46	1.3	387.2	158		89	244	250		66	3	
	56		.45	1.3	390.0	158		91	246	249		65	3.5	
	60		.43	1.3	393.0	159		91	246	249		65	3.5	
	64	13:41	.43	1.3	395.354	159		92	247	250		66	3.5	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _g	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-std} scf
			.688	1.3	42.959	157.81	86.81		237/253	241/254		67	3.5	



Integrated Air Services

Comments 0130

Flue Gas Composition
 Oxygen, %
 Carbon Dioxide, %
 Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

15730.001.008
 Pulp Dryer, Paper Machine,
 #2-3 SDCVs & #1-2 CBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source Pulp Dryer
 Sample Location Star outlet
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/26/21
 Test Personnel AM/CL
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y 1.988
 Console ΔH@ 1.732
 Probe ID/Length P125B 3'
 Liner Material SS
 Pitot ID/Coeff. P172 0.84
 Thermo ID A010
 Nozzle ID/Diams. .250
 Avg. Nozzle Diam. .250 in.

Ambient Temp. 90 °F
 Baro. Pressure* 29.70 in. Hg
 Static Pressure -1.27 in. H₂O
 Impinger Gain 43.8 mL
 Silica Gel Gain 9 g
 Stack Area 14.63 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	1,000	1,000
Pitot	8	5
	1,000	1,000

Filter ID NA

Sample ID RUN4

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
1-1B	0	13:47			395.500									
2	4		.50	1.3	397.8	157		41	240	245		66	3.5	
3	8		.51	1.3	401.1	158		41	242	246		66	3.5	
4	12		.52	1.3	403.7	158		42	244	238		64	3.5	
5	16		.50	1.3	406.3	159		42	246	247		64	3.5	
6	20		.47	1.3	404.2	160		42	246	249		63	3.5	
7	24		.47	1.3	404.3	160		42	248	249		62	4	
8	28		.45	1.3	415.2	161		41	246	248		61	4	
9-1A	32	14:14	.43	1.3	417.0	161		42	247	249		60	4	
2	36	14:23	.44	1.3	414.7	158		42	249	260		63	4	
3	40		.44	1.3	421.9	159		42	250	252		58	4	
4	44		.45	1.3	425.2	159		42	251	249		58	4	
5	48		.48	1.3	428.0	158		42	253	249		59	4	
6	52		.55	1.3	431.0	159		43	253	251		59	4	
7	56		.53	1.3	433.3	158		44	252	252		60	4	
8	60		.56	1.3	436.4	158		44	251	252		60	4	
9	64	14:53	.60	1.3	438.442	158		44	250	253		61	4	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _g	Avg T _m	O ₂ /CO ₂ by Orsat	Fyrite M3A	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-std} scf
			.70189	1.3	43.442	158.81	42.25	240/253	238/260	66	66	66	4	4
			493.48	1.140										



Integrated Air Services

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

Q_s, dscfm _____
 % Isokinetic _____
 Calculated by _____
 QC by _____

15730.001.008
 Pulp Dryer, #8 Paper Machine,
 #2-3 S0124 & #1-2 CBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client: New Indyl
Location/Plant: Catawba, SC
Source: Pulp Dryer
Sample Location: Stack outlet
W. O. Number: 15730.001.008
Run Number: 3
Date: 6/26/21
Test Personnel: ATN/CLL
Sample Time: 64 min.

Console ID: A010
Meter Corr., Y: A
Console ΔH@: 1.732
Probe ID/Length: P05B 3'
Liner Material: SS
Pitot ID/Coeff.: P12 0.84
Thermo ID: A018
Nozzle ID/Diams.: 1250 in.
Avg. Nozzle Diam.: 1230 in.

Ambient Temp.: 40 °F
Baro. Pressure*: 29.70 in. Hg
Static Pressure: -1.27 in. H₂O
Impinger Gain: 93.8
Silica Gel Gain: 4.5
Stack Area: 14.63 ft²
Total Traverse Points: 16

K Factor: NA
Leak Checks: Initial: 0.00, Final: 0.00
@ Vac., in. Hg: 8
Pitot: 0.00

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	14:06			44434.200									
	4		.42	1.3	442.0	156		43	246	254	66		3.5	
	8		.41	1.3	444.6	158		43	248	254	64		3.5	
	12		.45	1.3	447.8	157		43	244	253	65		3.5	
	16		.46	1.3	450.2	157		44	248	253	64		3.5	
	20		.52	1.3	453.8	157		44	247	254	64		3.5	
	24		.53	1.3	455.5	158		44	246	254	64		4	
	28		.54	1.3	458.3	158		43	246	253	63		4	
	32	15:38	.53	1.3	460.4	158		44	247	254	63		4	
B-1	36	15:42	.48	1.3	463.7	158		43	246	255	66		4	
	40		.55	1.3	466.6	158		43	245	254	62		4	
	44		.55	1.3	469.2	159		43	248	253	63		4	
	48		.52	1.3	472.1	158		44	244	252	63		4	
	52		.49	1.3	474.9	158		44	250	251	63		4	
	56		.50	1.3	477.8	158		44	249	253	64		4	
	60		.49	1.3	480.5	159		44	244	251	65		4	
	64	16:14	.53	1.3	483.045	158		44	248	250	65		4	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	
			.7051	1.3	43,845	157.81	43.56	43.56	245.5	250.5	66		4	
			.4981	1.140										



Integrated Air Services

15730.001.008
Pulp Dryer, #1 Paper Machine,
#2-3 SDT's, & #1-2 CBs
Emission Report

Thermocouple Check
Meter Temp., °F
Ref. Temp., °F
Result

O₂/CO₂ by Orsat Fyrite M3A
Leak Check, Pre-run
Post-run

Flue Gas Composition
Oxygen, %
Carbon Dioxide, %
Moisture, %

Comments: R-1A1

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source Pulp Dryer
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID Run 1 Filter ID NA Analyst ATR

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	643.27001	780.3	643.2		917.9	
Initial	643.2	774.3	643.4	✓	909.6	
Gain	56.9 ✓	6 ✓	1.8 ✓	64.7	8.3 ✓	73 ✓

Impinger Color clear Labeled? —
Silica Gel Condition good Sealed? —

Run No. 2 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID Run 2 Filter ID NA Analyst ATR

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	809.2	804.2	636.4		835.7	
Initial	721.0	800.1	634.4	✓	826.7	
Gain	88.2 ✓	4.1 ✓	1.5 ✓	43.8	9 ✓	102.8 ✓

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Run No. 3 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID Run 3 Filter ID NA Analyst ATZ

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	778.1	785.2	646.2		922.4	
Initial	700.1	780.3	645.2	✓	917.9	
Gain	78 ✓	4.9 ✓	1.0 ✓	83.9	4.5 ✓	88.4 ✓

Impinger Color clear Labeled? —
Silica Gel Condition used Sealed? —

Check COC for Sample IDs of Media Blanks

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
Pulp Dryer #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client New Indy
Location/Plant Catawba, SC
Source Pulp Dryer

Operator VD
Date 25-Jun-21
W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	60.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	60
Area of Duct (ft ²)	19.63
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	6 1/2	6 1/2
3	19.4	11 1/2	12
4	32.3	19 1/2	19 1/2
5	67.7	40 1/2	40 1/2
6	80.6	48 1/2	48 1/2
7	89.5	53 1/2	54
8	96.8	58	58
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

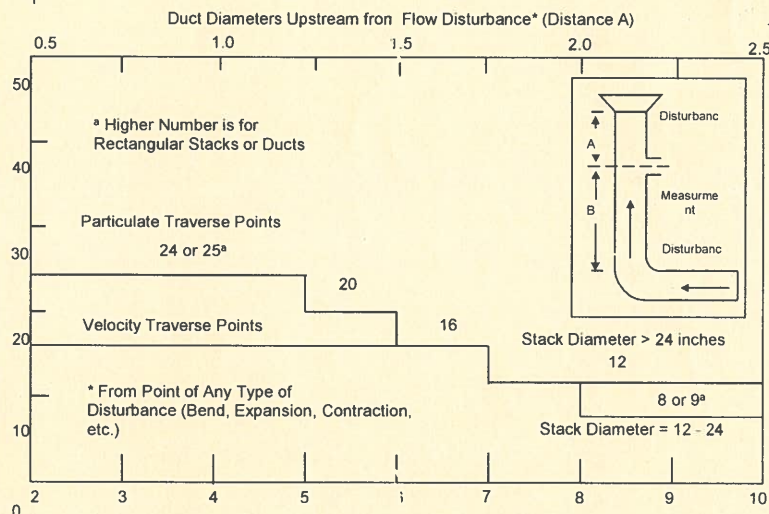
Traverse Point Location Percent of Stack -Circular

	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3			75		29.6		19.4		14.6		11.8	
4			93.3		70.4		32.3		22.6		17.7	
5				85.4		67.7		34.2		25		
6				95.6		80.6		65.8		35.6		
7					89.5		77.4		64.4			
8					96.8		85.4		75			
9						91.8		82.3				
10						97.4		88.2				
11							93.3					
12								97.9				

Flow Disturbances	
Upstream - A (ft)	8.75
Downstream - B (ft)	13.125
Upstream - A (duct diameters)	1.75
Downstream - B (duct diameters)	2.63

Diagram of Stack

See
Next
Pages



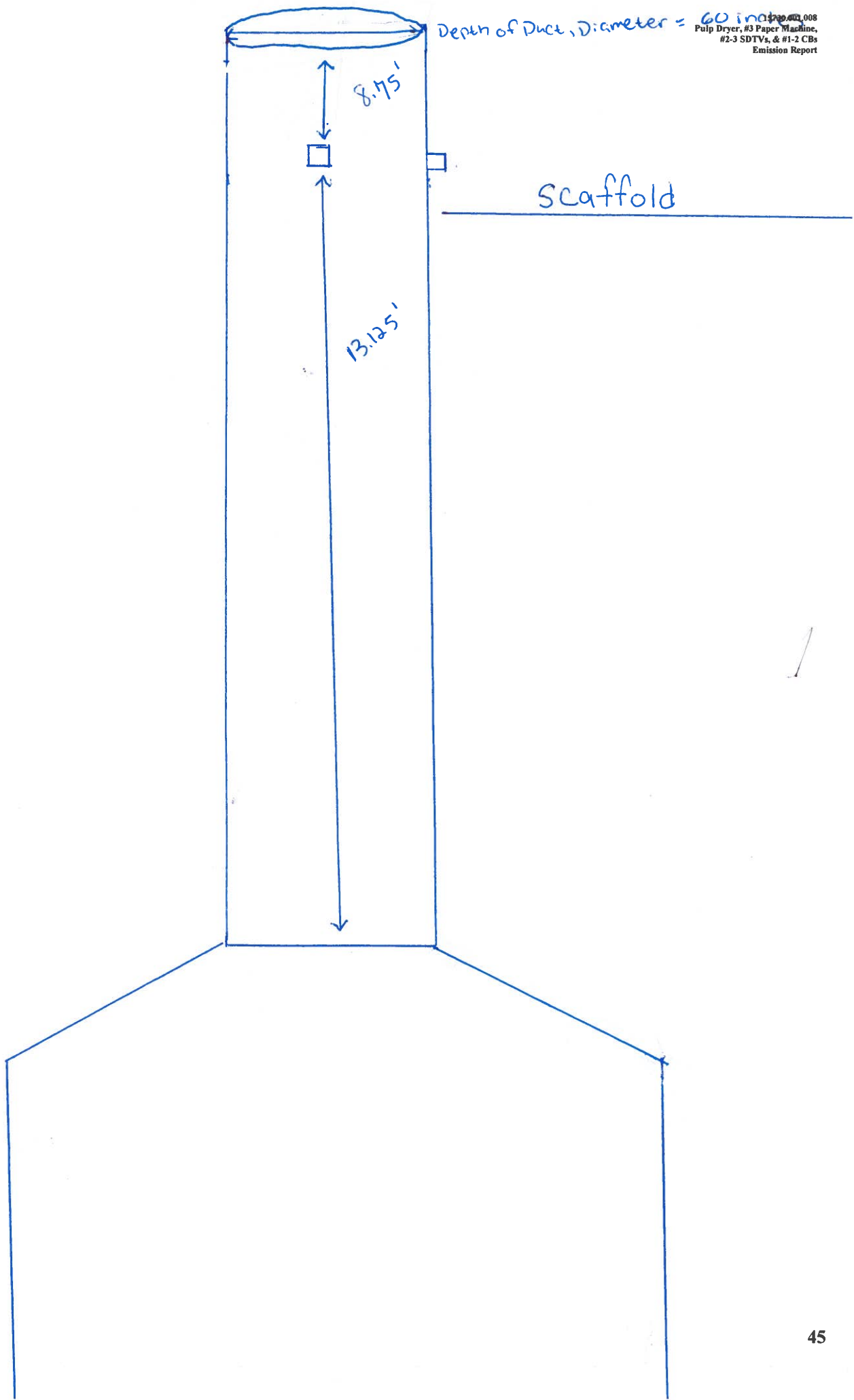
Traverse Point Location Percent of Stack -Rectangular

	1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular
Stack Points
& Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

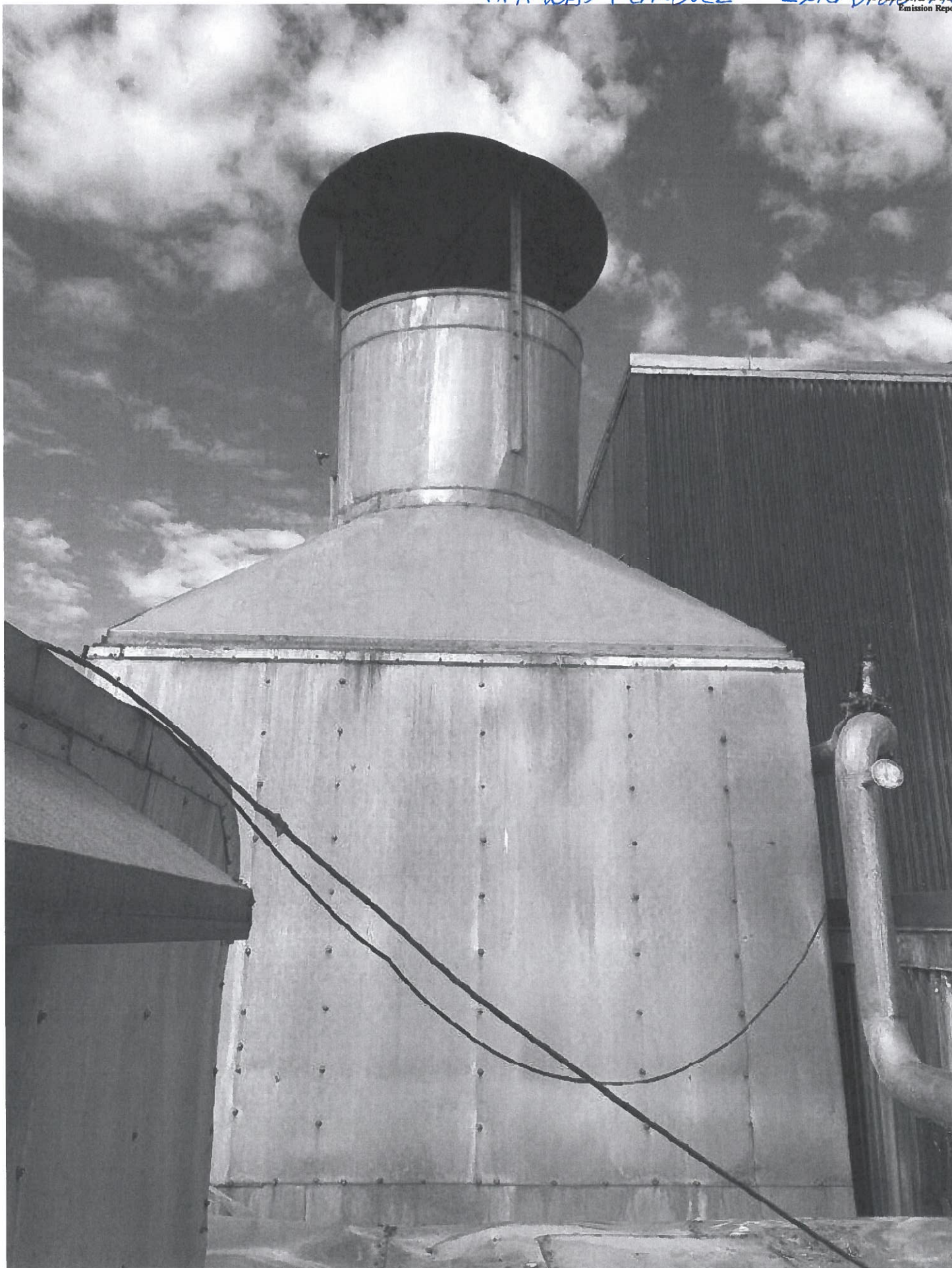
Port Diam. (in) = _____
Number of Ports = _____

Tape Measure I.D. # _____



HAT WAS REMOVED & EXTENSIVELY REPAIRED

15730.001.009
Pulp Dryer, #3 Paper Machine,
#2-5, #11, #14, & #17-20
Emission Report



RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 12:30 End Time 13:39

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~1.05~~ 1.04
0.96 ppm
96.6 %
~~1.09~~
1.08
AB
912.9 ✓

AB
911.5 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 13:47 End Time 14:54

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.45~~ 1.05

0.86 ppm

96.6 %

0.89 ppm

~~0.99~~

1.09

A3
9129 ✓

A3
915 ✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 15:06 End Time 16:11

Average Measured TRS Conc.

~~0.91~~ 1.02

0.80 ppm

Recovery No. 2

96.6 %

TRS Corrected for Recovery

~~0.83~~ ppm

~~0.91~~
1.06

AB
9/15 ✓

RUN DATA

Number 1

Client: New Indy
Location: Catawba, NC
Source: Pulp Dryer
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMS			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
12:30	5	0.11		95	0.91		<2		0.08	<2		0.038		1.18	
12:33	6	0.13		96	0.91		<2		0.08	<2		0.038		1.20	
12:36	<2		0.07	95	0.91		<2		0.08	<2		0.038		1.14	
12:39	4	0.11		95	0.91		<2		0.08	<2		0.038		1.17	
12:42	7	0.13		95	0.91		<2		0.08	<2		0.038		1.20	
12:45	6	0.12		95	0.91		<2		0.08	<2		0.038		1.19	
12:48	5	0.11		95	0.91		<2		0.08	<2		0.038		1.18	
12:51	5	0.11		94	0.91		<2		0.08	<2		0.038		1.17	
12:54	4	0.11		94	0.91		<2		0.08	<2		0.038		1.17	
12:57	<2		0.07	92	0.90		<2		0.08	<2		0.038		1.12	
Paused for port change															
13:09	<2		0.07	88	0.88		<2		0.08	<2		0.038		1.10	
13:33	<2		0.07	89	0.88		<2		0.08	<2		0.038		1.11	
13:15	3	0.09		88	0.87		<2		0.08	<2		0.038		1.12	
13:18	<2		0.07	91	0.89		<2		0.08	<2		0.038		1.12	
13:21	3	0.09		89	0.88		<2		0.08	<2		0.038		1.13	
13:24	<2		0.07	89	0.88		<2		0.08	<2		0.038		1.11	
13:27	2	0.08		91	0.89		<2		0.08	<2		0.038		1.12	
13:30	<2		0.07	86	0.86		<2		0.08	<2		0.038		1.09	
13:33	4	0.10		87	0.87		<2		0.08	<2		0.038		1.12	
13:36	2	0.08		87	0.87		<2		0.08	<2		0.038		1.11	
Averages			0.09											1.14	

RUN DATA

Number 2

Client: New Indy
Location: Catawba, NC
Source: Pulp Dryer
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMSD			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
13:47	3	0.09		79	0.83		<2		0.08	<2		0.038		1.07	
13:50	<2		0.07	79	0.83		<2		0.08	<2		0.038		1.05	
13:53	<2		0.07	80	0.83		<2		0.08	2	0.04			1.07	
13:56	<2		0.07	80	0.83		2	0.08		<2		0.038		1.06	
13:59	3	0.09		79	0.82		<2		0.08	<2		0.038		1.07	
14:02	3	0.09		79	0.82		<2		0.08	<2		0.038		1.07	
14:05	4	0.11		79	0.83		<2		0.08	<2		0.038		1.09	
14:08	<2		0.07	78	0.82		<2		0.08	<2		0.038		1.05	
14:11	<2		0.07	75	0.81		<2		0.08	2	0.04			1.04	
14:14	<2		0.07	77	0.82		<2		0.08	<2		0.038		1.04	
14:24	<2		0.07	74	0.80		<2		0.08	<2		0.038		1.03	
14:27	<2		0.07	73	0.79		<2		0.08	<2		0.038		1.02	
14:30	3	0.09		75	0.81		<2		0.08	<2		0.038		1.05	
14:33	<2		0.07	76	0.81		<2		0.08	<2		0.038		1.04	
14:36	<2		0.07	76	0.81		<2		0.08	<2		0.038		1.03	
14:39	<2		0.07	75	0.80		<2		0.08	<2		0.038		1.03	
14:42	2	0.08		75	0.81		<2		0.08	<2		0.038		1.04	
14:45	3	0.09		77	0.81		<2		0.08	<2		0.038		1.06	
14:48	<2		0.07	77	0.81		<2		0.08	<2		0.038		1.04	
14:51	<2		0.07	73	0.79		<2		0.08	<2		0.038		1.02	
Averages			0.08											1.05	

RUN DATA

Number 3

Client: New Indy
Location: Catawba, NC
Source: Pulp Dryer

Method: 16
Calibration: 1

Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
15:06	<2		0.07	68	0.77		<2		0.08	2	0.04		1.00	
15:09	<2		0.07	72	0.79		<2		0.08	<2		0.038	1.01	
15:12	<2		0.07	71	0.78		<2		0.08	<2		0.038	1.01	
15:15	<2		0.07	73	0.79		<2		0.08	<2		0.038	1.02	
15:18	<2		0.07	75	0.81		<2		0.08	<2		0.038	1.03	
14:24	<2		0.07	74	0.80		<2		0.08	<2		0.038	1.03	
15:24	<2		0.07	74	0.80		<2		0.08	<2		0.038	1.03	
15:27	<2		0.07	75	0.81		<2		0.08	<2		0.038	1.03	
15:30	2	0.08		75	0.80		<2		0.08	<2		0.038	1.04	
15:33	3	0.08		75	0.80		<2		0.08	<2		0.038	1.04	
15:41	<2		0.07	70	0.78		<2		0.08	<2		0.038	1.00	
15:44	<2		0.07	71	0.78		<2		0.08	<2		0.038	1.01	
15:47	<2		0.07	69	0.77		<2		0.08	<2		0.038	1.00	
15:50	<2		0.07	72	0.79		<2		0.08	<2		0.038	1.01	
15:53	<2		0.07	70	0.78		<2		0.08	<2		0.038	1.00	
15:56	<2		0.07	70	0.78		<2		0.08	<2		0.038	1.01	
15:59	<2		0.07	74	0.80		<2		0.08	<2		0.038	1.03	
16:02	<2		0.07	71	0.78		<2		0.08	<2		0.038	1.01	
16:05	<2		0.07	69	0.77		<2		0.08	<2		0.038	1.00	
16:08	<2		0.07	70	0.78		<2		0.08	<2		0.038	1.00	
Averages			0.07										1.02	

RUN DATA

Number 1

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
12:30	5	0.11	95	0.91	<2	<0.080	<2	<0.038	1.02
12:33	6	0.13	96	0.91	<2	<0.080	<2	<0.038	1.04
12:36	<2	<0.070	95	0.91	<2	<0.080	<2	<0.038	0.91
12:39	4	0.11	95	0.91	<2	<0.080	<2	<0.038	1.02
12:42	7	0.13	95	0.91	<2	<0.080	<2	<0.038	1.04
12:45	6	0.12	95	0.91	<2	<0.080	<2	<0.038	1.04
12:48	5	0.11	95	0.91	<2	<0.080	<2	<0.038	1.02
12:51	5	0.11	94	0.91	<2	<0.080	<2	<0.038	1.01
12:54	4	0.11	94	0.91	<2	<0.080	<2	<0.038	1.01
12:57	<2	<0.070	92	0.90	<2	<0.080	<2	<0.038	0.90
Paused for port change									
13:09	<2	<0.070	88	0.88	<2	<0.080	<2	<0.038	0.88
13:12	<2	<0.070	89	0.88	<2	<0.080	<2	<0.038	0.88
13:15	3	0.09	88	0.87	<2	<0.080	<2	<0.038	0.97
13:18	<2	<0.070	91	0.89	<2	<0.080	<2	<0.038	0.89
13:21	3	0.09	89	0.88	<2	<0.080	<2	<0.038	0.97
13:24	<2	<0.070	89	0.88	<2	<0.080	<2	<0.038	0.88
13:27	2	0.08	91	0.89	<2	<0.080	<2	<0.038	0.97
13:30	<2	<0.070	86	0.86	<2	<0.080	<2	<0.038	0.86
13:33	4	0.10	87	0.87	<2	<0.080	<2	<0.038	0.97
13:36	2	0.08	87	0.87	<2	<0.080	<2	<0.038	0.95
Average		<0.070		0.89		<0.080		<0.038	0.96 ✓

RUN DATA

Number 2

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
13:47	3	0.09	79	0.83	<2	<0.080	<2	<0.038	0.92
13:50	<2	<0.070	79	0.83	<2	<0.080	<2	<0.038	0.83
13:53	<2	<0.070	80	0.83	<2	<0.080	2	0.04	0.92
13:56	<2	<0.070	80	0.83	2	0.08	<2	<0.038	0.92
13:59	3	0.09	79	0.82	<2	<0.080	<2	<0.038	0.91
14:02	3	0.09	79	0.82	<2	<0.080	<2	<0.038	0.91
14:05	4	0.11	79	0.83	<2	<0.080	<2	<0.038	0.93
14:08	<2	<0.070	78	0.82	<2	<0.080	<2	<0.038	0.82
14:11	<2	<0.070	75	0.81	<2	<0.080	2	0.04	0.89
14:14	<2	<0.070	77	0.82	<2	<0.080	<2	<0.038	0.82
14:24	<2	<0.070	74	0.80	<2	<0.080	<2	<0.038	0.80
14:27	<2	<0.070	73	0.79	<2	<0.080	<2	<0.038	0.79
14:30	3	0.09	75	0.81	<2	<0.080	<2	<0.038	0.89
14:33	<2	<0.070	76	0.81	<2	<0.080	<2	<0.038	0.81
14:36	<2	<0.070	76	0.81	<2	<0.080	<2	<0.038	0.81
14:39	<2	<0.070	75	0.80	<2	<0.080	<2	<0.038	0.80
14:42	2	0.08	75	0.81	<2	<0.080	<2	<0.038	0.88
14:45	3	0.09	77	0.81	<2	<0.080	<2	<0.038	0.90
14:48	<2	<0.070	77	0.81	<2	<0.080	<2	<0.038	0.81
14:51	<2	<0.070	73	0.79	<2	<0.080	<2	<0.038	0.79
Average		<0.070		0.81		<0.080		<0.038	0.86 ✓

RUN DATA

Number 3

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
15:06	<2	<0.070	68	0.77	<2	<0.080	2	0.04	0.85
15:09	<2	<0.070	72	0.79	<2	<0.080	<2	<0.038	0.79
15:12	<2	<0.070	71	0.78	<2	<0.080	<2	<0.038	0.78
15:15	<2	<0.070	73	0.79	<2	<0.080	<2	<0.038	0.79
15:18	<2	<0.070	75	0.81	<2	<0.080	<2	<0.038	0.81
15:21	<2	<0.070	74	0.80	<2	<0.080	<2	<0.038	0.80
15:24	<2	<0.070	74	0.80	<2	<0.080	<2	<0.038	0.80
15:27	<2	<0.070	75	0.81	<2	<0.080	<2	<0.038	0.81
15:30	2	0.08	75	0.80	<2	<0.080	<2	<0.038	0.88
15:33	3	0.08	75	0.80	<2	<0.080	<2	<0.038	0.89
15:41	<2	<0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
15:44	<2	<0.070	71	0.78	<2	<0.080	<2	<0.038	0.78
15:47	<2	<0.070	69	0.77	<2	<0.080	<2	<0.038	0.77
15:50	<2	<0.070	72	0.79	<2	<0.080	<2	<0.038	0.79
15:53	<2	<0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
15:56	<2	<0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
15:59	<2	<0.070	74	0.80	<2	<0.080	<2	<0.038	0.80
16:02	<2	<0.070	71	0.78	<2	<0.080	<2	<0.038	0.78
16:05	<2	<0.070	69	0.77	<2	<0.080	<2	<0.038	0.77
16:08	<2	<0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
Average		<0.070		0.79		<0.080		<0.038	0.80 ✓

RUN DATA

Number 0

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
CC416806 7.257 ppm ✓									
09:13	13230	7.45	<2	<0.12	<2	<0.080	<2	<0.038	7.45
09:16	13533	7.54	<2	<0.12	<2	<0.080	<2	<0.038	7.54
09:19	13251	7.45	<2	<0.12	<2	<0.080	<2	<0.038	7.45
Average		7.48	<0.12		<0.080		<0.038		7.48

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Before Run 1

Start Time 10:47 End Time 11:08

Recovery Gas to Probe, Time 10:47

Peak Areas, mv-sec			Average	ppm
11865	11836	11866	11856 ✓	7.03

Recovery Gas to GC, Time 11:06

Peak Areas, mv-sec			Average	ppm
14001	14035	13928	13988 ✓	7.67

Recovery 91.6% ✓

✓

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

After Run 3 Before Run 4
Start Time 16:11 End Time 16:23

Recovery Gas to Probe, Time 16:11

Peak Areas, mv-sec			Average	ppm
12698	12844	13017	12853 ✓	7.33

Recovery Gas to GC, Time 16:20

Peak Areas, mv-sec			Average	ppm
13674	13559	13930	13721 ✓	7.59

Recovery 96.6% ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Ambient Temperature: 72°C

Barometric Pressure: 29.70 in. Hg

Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	363	470	238
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 38.9 mL/Min 8.90 ppm 9.36 ppm 12.1 ppm 6.12 ppm

Time: 06:02 Peak Areas, mv-sec

18368	8795	28785	34758
18368	8383	27462	34707
18202	8971	28270	35006

Average Area 18313 ✓ 8716 ✓ 28172 ✓ 34824 ✓

2 Flow = 82.3 mL/Min 4.21 ppm 4.42 ppm 5.72 ppm 2.89 ppm

Time: 07:54 Peak Areas, mv-sec

4512	2067	6969	8481
4642	2032	7036	8510
4706	2195	7080	8577

Average Area 4620 ✓ 2098 ✓ 7028 ✓ 8523 ✓

3 Flow = 175 mL/Min 1.98 ppm 2.08 ppm 2.69 ppm 1.36 ppm

Time: 08:29 Peak Areas, mv-sec

1065	476	1647	1910
1045	464	1599	1954
1126	467	1556	1919

Average Area 1079 ✓ 469 ✓ 1601 ✓ 1928 ✓

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Method **16**

H₂S	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	8.90	4.21	1.98		
Area, mv-sec	18313	4620	1079		
Calc. Conc., ppm	8.85	4.26	1.97		
% Error	-0.6	1.2	-0.6		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8832	2.4794	0.9999	2	0.070
MeSH	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	9.36	4.42	2.08		
Area, mv-sec	8716	2098	469		
Calc. Conc., ppm	9.31	4.47	2.07		
% Error	-0.5	1.1	-0.5		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9432	2.0579	0.9999	2	0.12
DMS	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	12.1	5.72	2.69		
Area, mv-sec	28172	7028	1601		
Calc. Conc., ppm	12.0	5.80	2.67		
% Error	-0.7	1.4	-0.7		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9072	2.3902	0.9999	2	0.080
DMDS	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	6.12	2.89	1.36		
Area, mv-sec	34824	8523	1928		
Calc. Conc., ppm	6.08	2.93	1.35		
% Error	-0.6	1.2	-0.6		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9245	3.0328	0.9999	2	0.038

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Ambient Temperature: 72°C

Barometric Pressure: 29.70 in. Hg

Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	363	470	238
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 37.1 mL/Min **9.32 ppm** **9.79 ppm** **12.7 ppm** **6.41 ppm**

Time: 07:00

Peak Areas, mv-sec

17531	8727	27825	33485
17951	8703	27443	33712
18066	8758	27669	33342
17849 ✓	8730 ✓	27646 ✓	33513

2 Flow = 78.5 mL/Min **4.41 ppm** **4.63 ppm** **5.99 ppm** **3.03 ppm**

Time: 08:24

Peak Areas, mv-sec

4366	2153	6888	8191
4464	2149	6729	8050
4361	2131	6827	8110
4397	2145	6815	8117

3 Flow = 172 mL/Min **2.01 ppm** **2.11 ppm** **2.73 ppm** **1.38 ppm**

Time: 08:47

Peak Areas, mv-sec

1026	464	1561	1864
980	466	1558	1873
996	463	1569	1872
1001	464	1563	1870

W

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

H₂S	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.32	4.41	2.01		
Area, mv-sec	17849	4397	1001		
Calc. Conc., ppm	9.31	4.42	2.01		
% Error	-0.1	0.2	-0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8784	2.4316	>0.9999	2	0.073
MeSH	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.79	4.63	2.11		
Area, mv-sec	8730	2145	464		
Calc. Conc., ppm	9.74	4.68	2.10		
% Error	-0.5	1.0	-0.5		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9131	2.0496	0.9999	2	0.12
DMS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	12.7	5.99	2.73		
Area, mv-sec	27646	6815	1563		
Calc. Conc., ppm	12.7	6.00	2.73		
% Error	-0.1	0.1	-0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8729	2.3765	>0.9999	2	0.078
DMDS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	6.41	3.03	1.38		
Area, mv-sec	33513	8117	1870		
Calc. Conc., ppm	6.42	3.02	1.38		
% Error	0.1	-0.3	0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8815	3.0064	>0.9999	2	0.036

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Analyte Molecular Weight	H ₂ S 34.08	MeSH 48.11	DMS 62.14	DMDS 94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483 ✓	716 ✓	1197 ✓	918 ✓
Permeation Rate, nL/min*	346	363	470	238

Barometric Pressure: 29.70 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70) \\ = 346 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, NC**
Source: **Pulp Dryer**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

File: C:\Data\210626 New Indy Catawba Pulp Dryer.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061
Detector Range: 10

Gases			Temperatures, °C	Columns
Press.	Flow			
psi	mL/min			
H ₂	30	50	Column: 140	Primary: Carbopack
Air	30	60	Detector: 140	Secondary: N/A
Carrier	50	30		Sample Loop: 4"

Injection Cycle

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Project Number: **15730.001.008**

Operator: **VD**

Date: **26 Jun 2021**

Calibration 1

Time	O ₂		CO ₂	
	mv	%	mv	%
Pulp Dryer Run 1				
13:37:08	7063	20.8	-8	0.0
13:37:18	7062	20.8	-6	0.0
13:37:28	7061	20.8	-5	0.0
13:37:38	7061	20.8	-5	0.0
13:37:48	7062	20.8	-5	0.0
13:37:58	7061	20.8	-5	0.0
13:38:08	7061	20.8	-6	0.0
13:38:18	7061	20.8	-8	0.0
13:38:28	7061	20.8	-8	0.0
13:38:38	7061	20.8	-6	0.0
13:38:48	7062	20.8	-5	0.0
13:38:58	7061	20.8	-5	0.0
Avg	7061	20.8	-6	0.0

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
Pulp Dryer Run 2				
14:57:11	7115	20.9	-5	0.0
14:57:21	7115	20.9	-5	0.0
14:57:31	7115	20.9	-5	0.0
14:57:41	7116	20.9	-5	0.0
14:57:51	7115	20.9	-5	0.0
14:58:01	7116	20.9	-8	0.0
14:58:11	7116	20.9	-5	0.0
14:58:21	7114	20.9	-5	0.0
14:58:31	7116	20.9	-5	0.0
14:58:41	7115	20.9	-5	0.0
14:58:51	7114	20.9	-5	0.0
14:59:01	7114	20.9	-5	0.0
Avg	7115	20.9	-5	0.0

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
Pulp Dryer Run 3				
16:13:58	7118	20.9	-6	0.0
16:14:08	7118	20.9	-5	0.0
16:14:18	7116	20.9	-5	0.0
16:14:28	7118	20.9	-5	0.0
16:14:38	7116	20.9	-5	0.0
16:14:48	7116	20.9	-5	0.0
16:14:58	7117	20.9	-7	0.0
16:15:08	7118	20.9	-8	0.0
16:15:18	7118	20.9	-6	0.0
16:15:28	7118	20.9	-5	0.0
16:15:38	7115	20.9	-5	0.0
16:15:48	7118	20.9	-5	0.0
Avg	7117	20.9	-6	0.0

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time: 10:58

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-5
10.1 ✓	XC013544B	3430
20.2 ✓	CC275468	6891

Curve Coefficients

Slope	Intercept	Corr. Coeff.
340.7	-12 ✓	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-7
10.2 ✓	XC013544B	4123
20.3 ✓	CC275468	8231

Curve Coefficients

Slope	Intercept	Corr. Coeff.
406.4	-7 ✓	1.0000 ✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time: 10:58

O₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 340.7 **Intercept** -11.6

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-5	0.0	0.0	0.0 ✓	Pass
10.1	3430	10.1	0.0	0.0 ✓	Pass
20.2	6891	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Slope 406.4 **Intercept** -6.7

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-7	0.0	0.0	0.0 ✓	Pass
10.2	4123	10.2	0.0	0.0 ✓	Pass
20.3	8231	20.3	0.0	0.0 ✓	Pass

✓

CALIBRATION ERROR DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **26 Jun 2021**

Start Time: 16:23

O₂

Method: EPA 3A

Span Conc. 20.2 %

Slope 340.7

Intercept -11.6

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-5	0.0	0.0	0.0 ✓	Pass
10.1	3430	10.1	0.0	0.0 ✓	Pass
20.2	6891	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.3 %

Slope 406.4

Intercept -6.7

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-7	0.0	0.0	0.0 ✓	Pass
10.2	4123	10.2	0.0	0.0 ✓	Pass
20.3	8231	20.3	0.0	0.0 ✓	Pass

✓

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Pulp Dryer**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

File: C:\Data\210626 New Indy Catawba Pulp Dryer.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: WSAUBCHEMLABGC1 **Trailer:** 281
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.3



APPENDIX D

FIELD DATA – NO. 3 PAPER MACHINE



APPENDIX D

VENT 1

New Indy
Catawba, SC

15730.001.008
No. 1 Hood Exhaust
Paper Machine Vent 1

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	---
Time Began	755	900	1005	---
Time Ended	855	1000	1105	---
Volumetric Flow Rate, (Qs), DSCFM	3.50E+04	3.47E+04	3.47E+04	3.48E+04
BWS	0.188	0.188	0.182	0.186
% Oxygen	20.2	20.2	20.2	20.2
Recovery, %	97.6	97.6	97.6	97.6
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	0.58	0.64	0.69	0.64
Emission Rate, lb/hr	0.11	0.12	0.13	0.12
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.18	0.21	0.21	0.20
Concentration, ppm (Corrected for Recovery)	0.18	0.22	0.22	0.20
Emission Rate, lb/hr	0.03	0.04	0.04	0.04

New Indy
Catawba, SC

15730.001.008
No. 1 Hood Exhaust

Paper Machine Vent 1

ISOKINETIC CALCULATIONS

Run Number		1	2	3	Mean
Date		6/25/21 ✓	6/25/21 ✓	6/25/21 ✓	---
Time Began		755 ✓	900 ✓	1005 ✓	---
Time Ended		844 ✓	952 ✓	1054 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	48.0 ✓	48 ✓	48 ✓	48
Stack Diameter, in.	(Dia.)	50.00 ✓	50.00 ✓	50.00 ✓	50.00
Barometric Pressure, in. Hg	(Pb)	29.68 ✓	29.68 ✓	29.68 ✓	29.68
Static Pressure, in. H2O	(Pg)	-0.65 ✓	-0.68 ✓	-0.68 ✓	-0.67
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.0030 ✓	1.0030 ✓	1.0030 ✓	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 ✓	1.8000 ✓	1.8000 ✓	1.8000
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	29.740 ✓	29.705 ✓	30.008 ✓	29.818
Meter Temperature, °F	(Tm)	62.2 ✓	69.8 ✓	75.6 ✓	69.2
Meter Temperature, °R	(Tm-R)	522.2	529.8	535.6	529.2
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	147.7 ✓	145.6 ✓	139.1 ✓	144.1
CO2 Concentration, %	(CO2)	0.2 ✓	0.2 ✓	0.2 ✓	0.2
O2 Concentration, %	(O2)	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	0.993 ✓	0.987 ✓	0.980 ✓	0.987
Stack Temperature, °F	(Ts)	171.2 ✓	172.3 ✓	173.1 ✓	172.2
Stack Temperature, °R	(Ts-R)	631.2	632.3	633.1	632.2
Moisture Fraction (at Saturation)	(BWS)	0.423 ✓	0.434 ✓	0.442 ✓	0.433
CALCULATED DATA					
Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	13.64 ✓	13.64 ✓	13.64 ✓	13.64
Stack Pressure, in. Hg	(Ps)	29.63 ✓	29.63	29.63	29.63
Meter Pressure, in. Hg	(Pm)	29.78 ✓	29.78	29.78	29.78
Standard Meter Volume, ft ³	(Vmstd)	30.003 ✓	29.538	29.516	29.686
Standard Water Volume, ft ³	(Vwstd)	6.952 ✓	6.853	6.547	6.784
Moisture Fraction (Measured)	(BWS)	0.188 ✓	0.188	0.182	0.186
Moisture Fraction (lower sat/meas)	(BWS)	0.188 ✓	0.188	0.182	0.186
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84 ✓	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.80 ✓	26.80	26.87	26.82
Average Stack Gas Velocity, ft/sec	(Vs)	63.60 ✓	63.25	62.73	63.19
Stack Gas Flow, actual, ft ³ /min	(Qa)	52031 ✓	51745	51320	51699
Stack Gas Flow, Std, ft ³ /min	(Qs)	34982	34718	34676	34792
Calibration check	(Yqa)	1.0288	1.0375	1.0326	1.033
Percent difference from Y					2.99%

Isokinetic Field Data

Method: EPA 4, Moisture

Client: New Indy
Location/Plant: Catawba, SC
Source: No. 1 Hood Exhaust
Sample Location: Roof
W. O. Number: 15730.001.008
Run Number: 1
Date: 6/25/21
Test Personnel: DEATRE
Sample Time: 48 min.

Console ID: A023
Meter Corr., Y: 1.003
Console ΔH@: 1.500
Probe ID/Length: 7166 6'
Liner Material: SS
Pitot ID/Coeff.: P77 0.84
Thermo ID: A023
Nozzle ID/Diams.:
Avg. Nozzle Diam.: .250 in.

Ambient Temp: 63 °F
Baro. Pressure*: 29.68 in. Hg
Static Pressure: -1.65 in. H₂O
Impinger Gain: 140.7 mL
Silica Gel Gain: 7 g
Stack Area: 13.64 ft²

K Factor: N/A

Leak Checks

	Initial	Final
Volume, ft ³	0.000	0.001
@ Vac., in. Hg	13"	5"
Pitot	Good	Good

Filter ID: N/A
Sample ID: R01

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	7:55			731.586									
	3		1.0	1.3	733.4	170	114	57	244	241	N/A	58	3	
	6		1.2	1.3	735.4	170		58	240	249		52	3	
	9		1.5	1.3	737.2	171		60	242	253		52	3	
	12		1.1	1.3	737.1	172		60	243	250		53	3	
	15		1.0	1.3	741.0	172		61	244	254		53	3	
	18		1.0	1.3	742.8	172		61	241	254		54	3	
	21		1.0	1.3	744.7	172		62	241	256		54	3	
	24		1.0	1.3	746.5	172		62	240	255		55	3	
B-1	27		.97	1.3	748.3	170		63	242	254		55	3	
	30		.98	1.3	750.1	171		62	243	254		54	3	
	33		.99	1.3	752.0	171		63	242	256		54	3	
	36		.98	1.3	753.8	171		64	241	257		55	3	
	39		.99	1.3	755.7	171		65	243	256		55	3	
	42		.97	1.3	757.5	172		65	242	254		56	3	
	45		.94	1.3	759.4	172		66	242	258		57	3	
	48	8:44	.75	1.3	761.246	176		66	241	254		57	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _m	Avg T _i	Avg T _o	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _m -std. scf
			.9434	1.300	29.74	171.2		62.2	241.4	241/258		58	3	



Flue Gas Composition
Oxygen, % 20.3
Carbon Dioxide, % 0.2
Moisture, % 18.8

Thermocouple Check
Meter Temp., °F
Ref. Temp., °F
Result

Leak Check, Pre-run
Post-run

Comments: .988

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2.3 SDTV & #1-2 CBs
Emission Report

QC by: [Signature]

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	AO 23	Ambient Temp.	70	°F
Location/Plant	Catawba, SC	Meter Corr., Y	1.003	Baro. Pressure*	29.68	in. Hg
Source	No. 1 Hood Exhaust	Console ΔH@	1.800	Static Pressure	- .68	in. H ₂ O
Sample Location	Roof	Probe ID/Length	PP4C - 6'	Impinger Gain	139.6	mL
W. O. Number	15730.001.008	Liner Material		Silica Gel Gain	6	g
Run Number	2	Pitot ID/Coeff.	P77			
Date	6/25/21	Thermo ID	AO23	Stack Area	13.64	ft ²
Test Personnel	BEA/BG	Nozzle ID/Diams.				
Sample Time	48 min.	Avg. Nozzle Diam.	.250	in.	Total Traverse Points	16

K Factor	N/A
----------	-----

Leak Checks

	Initial	Final
Volume, ft ³	.005	.001
@ Vac., in. Hg	12"	5"
Pitot	beed	beed

Filter ID	N/A
Sample ID	run 2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY: PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH_2 (in. H ₂ O)	DRY/GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
	0	09:00			761.500									
A-1	3	7:13Z	1.1	1.3	763.4	173	N/A	68	244	254	N/A	51	3	
2	6		1.1	1.3	765.2	173		68	241	256		49	3	
3	9		1.2	1.3	767.0	173		68	242	264		48	3	
4	12		1.1	1.3	769.1	173		69	243	254		47	3	
5	15		1.0	1.3	770.8	173		69	244	258		49	3	
6	18		.99	1.3	772.6	173		68	242	256		50	3	
7	21		.96	1.3	774.5	173		69	244	258		51	3	
8	24		.94	1.3	776.3	172		70	245	254		51	3	
B-1	27		.95	1.3	778.1	172		70	243	255		54	3	
2	30		.94	1.3	780.0	172		70	242	254		52	3	
3	33		.97	1.3	781.8	172		71	241	256		52	3	
4	36		.98	1.3	783.7	173		71	243	255		53	3	
5	39		1.0	1.3	785.6	173		71	244	256		53	3	
6	42		.99	1.3	787.5	173		72	244	254		54	3	
7	45		.71	1.3	789.3	169		70	241	253		54	3	
8	48	09:52	.72	1.3	791.205	169		72	242	253		54	3	

*Barometric Pressure is at port elevation



Integrated Air Services

Comments	<div style="border: 1px solid black; padding: 5px;"> Avg. $\sqrt{\Delta H}$ 1.1402 </div>	✓	Flue Gas Composition	O ₂ /CO ₂ by Orsat Fyrite M3A
			Oxygen, %	Leak Check, Pre-run
			Carbon Dioxide, %	Post-run
			Moisture, %	

Thermocouple Check	Q _s , dscfm	QC by
Meter Temp., °F	% Isokinetic	
Ref. Temp., °F	Calculated by	
Result		

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 1 Hood Exhaust
 Sample Location 15730.001.008
 W. O. Number 3
 Run Number 6/25/21
 Date 131A/131
 Test Personnel 48 min.
 Sample Time

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PRUC-6'
 Liner Material 55
 Pitot ID/Coeff. 0.84
 Thermo ID 1023
 Nozzle ID/Diams. 1/2
 Avg. Nozzle Diam. 0.750 in. Total Traverse Points 16

K Factor N/A
 Leak Checks
 Volume, ft³ 0.000
 @ Vac., in. Hg 12"
 Pitot good
 Filter ID N/A
 Sample ID Run 3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	10:05	.92	1.3	791.500	172	N/A	73	244	256	N/A	558	2	
2	3		.91	1.3	793.4	172		74	241	250		59	2	
3	6		.96	1.3	795.2	173		74	241	253		57	2	
4	9		.98	1.3	797.0	173		74	244	255		56	2	
5	12		1.0	1.3	800.9	173		75	242	254		54	2	
6	15		.99	1.3	802.8	174		75	240	253		54	2	
7	18		.98	1.3	804.7	174		75	242	256		54	2	
8	21		.92	1.3	806.6	173		76	240	255		55	2	
B-1	24		.82	1.3	808.5	171		76	244	250		58	2	
2	27		1.1	1.3	810.4	173		76	243	253		57	2	
3	30		1.1	1.3	812.2	174		76	244	252		56	2	
4	33		1.1	1.3	814.1	174		77	241	254		56	2	
5	36		.93	1.3	816.0	174		77	240	255		57	2	
6	39		.94	1.3	817.8	174		77	241	253		58	2	
7	42		.87	1.3	819.6	173		77	240	255		58	2	
8	45		.86	1.3	821.508	172		78	243	250		60	2	
8	48	10:54	.9796	1.300	30.008	173.1		75.6	240.4	250.256		60	2	

*Barometric Pressure is at port elevation

WESTON SOLUTIONS®
 Integrated Air Services

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 0.2
 Moisture, %

Thermocouple Check
 Meter Temp., °F 60
 Ref. Temp., °F 60
 Result

Leak Check, Pre-run
 O₂/CO₂ by Orsat Fyrite M3A 75.6
 Leak Check, Post-run

Comments 9613

15730.001.008
 Pulp Dryer, Paper Machine,
 #1-3 SPMs & #1-2 CBs
 Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 1 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No.	<u>1</u>			Sample Date	<u>6/25/21</u>			Recovery Date	<u>6/25/21</u>		
Sample ID				Filter ID	<u>N/A</u>			Analyst	<u>BEA/BE</u>		
	Impingers										
	1	2	3		Imp.Total	Silica Gel	Total				
Contents						grams					
Final	<u>864.6</u>	<u>896.1</u>	<u>651.1</u>			<u>881.7</u>					
Initial	<u>797.5</u>	<u>828.6</u>	<u>645.0</u>			<u>879.7</u>					
Gain	<u>117.1</u> ✓	<u>17.5</u> ✓	<u>6.1</u> ✓		<u>140.7</u>	<u>7</u> ✓	<u>147.7</u> ✓				
Impinger Color	<u>Clear</u>				Labeled?	<u>✓</u>					
Silica Gel Condition	<u>Good</u>				Sealed?	<u>✓</u>					

Run No.	<u>2</u>			Sample Date	<u>6/25/21</u>			Recovery Date	<u>6/25/21</u>		
Sample ID				Filter ID	<u>N/A</u>			Analyst	<u>BEA/BE</u>		
	Impingers										
	1	2	3		Imp.Total	Silica Gel	Total				
Contents						grams					
Final	<u>881.6</u>	<u>711.8</u>	<u>551.5</u>			<u>911.0</u>					
Initial	<u>759.5</u>	<u>696.2</u>	<u>549.6</u>			<u>905.0</u>					
Gain	<u>122.1</u> ✓	<u>15.6</u> ✓	<u>1.9</u> ✓		<u>139.6</u>	<u>6</u> ✓	<u>145.6</u> ✓				
Impinger Color	<u>Clear</u>				Labeled?	<u>✓</u>					
Silica Gel Condition	<u>Good</u>				Sealed?	<u>✓</u>					

Run No.	<u>3</u>			Sample Date	<u>6/25/21</u>			Recovery Date	<u>6/25/21</u>		
Sample ID				Filter ID	<u>N/A</u>			Analyst	<u>BEA/BE</u>		
	Impingers										
	1	2	3		Imp.Total	Silica Gel	Total				
Contents						grams					
Final	<u>879.4</u>	<u>823.0</u>	<u>652.9</u>			<u>852.1</u>					
Initial	<u>764.4</u>	<u>803.9</u>	<u>650.3</u>			<u>849.7</u>					
Gain	<u>115</u> ✓	<u>19.1</u> ✓	<u>2.6</u> ✓		<u>136.7</u>	<u>2.4</u> ✓	<u>139.1</u> ✓				
Impinger Color	<u>Clear</u>				Labeled?	<u>✓</u>					
Silica Gel Condition	<u>Good</u>				Sealed?	<u>✓</u>					

Check COC for Sample IDs of Media Blanks

(Signature)



Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
Pulp Dyer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client New Indy
Location/Plant Catawba, SC
Source No. 1 Hood Exhaust

Operator VD / LF
Date 15-Jun-21
W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	50.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	50
Area of Duct (ft ²)	13.64
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	1 1/2	1 1/2
2	10.5	5 1/2	5 1/2
3	19.4	9 1/2	10
4	32.3	16	16 1/2
5	67.7	34	34
6	80.6	40 1/2	40 1/2
7	89.5	45	45
8	96.8	48 1/2	48 1/2
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 \cdot L \cdot W) / (L + W)$$

Traverse Point Location Percent of Stack -Circular

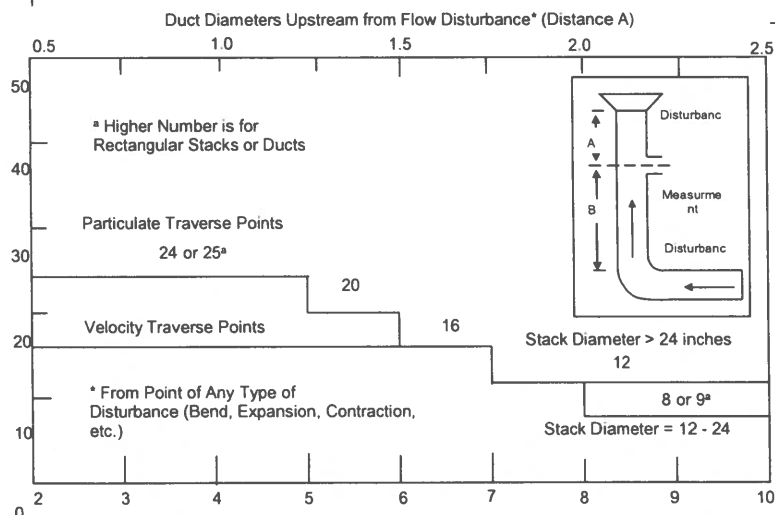
Number of Traverse Points

	1	2	3	4	5	6	7	8	9	10	11	12
T	1	14.6		6.7		4.4		3.2		2.6		2.1
r	2		85.4		25		14.6		10.5		8.2	6.7
a	3			75		29.6		19.4		14.6		11.8
v	4				93.3		70.4		32.3		22.6	17.7
L	5					85.4		67.7		34.2		25
e	6						95.6		80.6		65.8	35.6
o	7							89.5		77.4		64.4
r	8								96.8		85.4	75
c	9									91.8		82.3
s	10										97.4	88.2
a	11											93.3
e	12											

Flow Disturbances

Upstream - A (ft)	4.417
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.06
Downstream - B (duct diameters)	6.00

Diagram of Stack



Traverse Point Location Percent of Stack -Rectangular

Number of Traverse Points

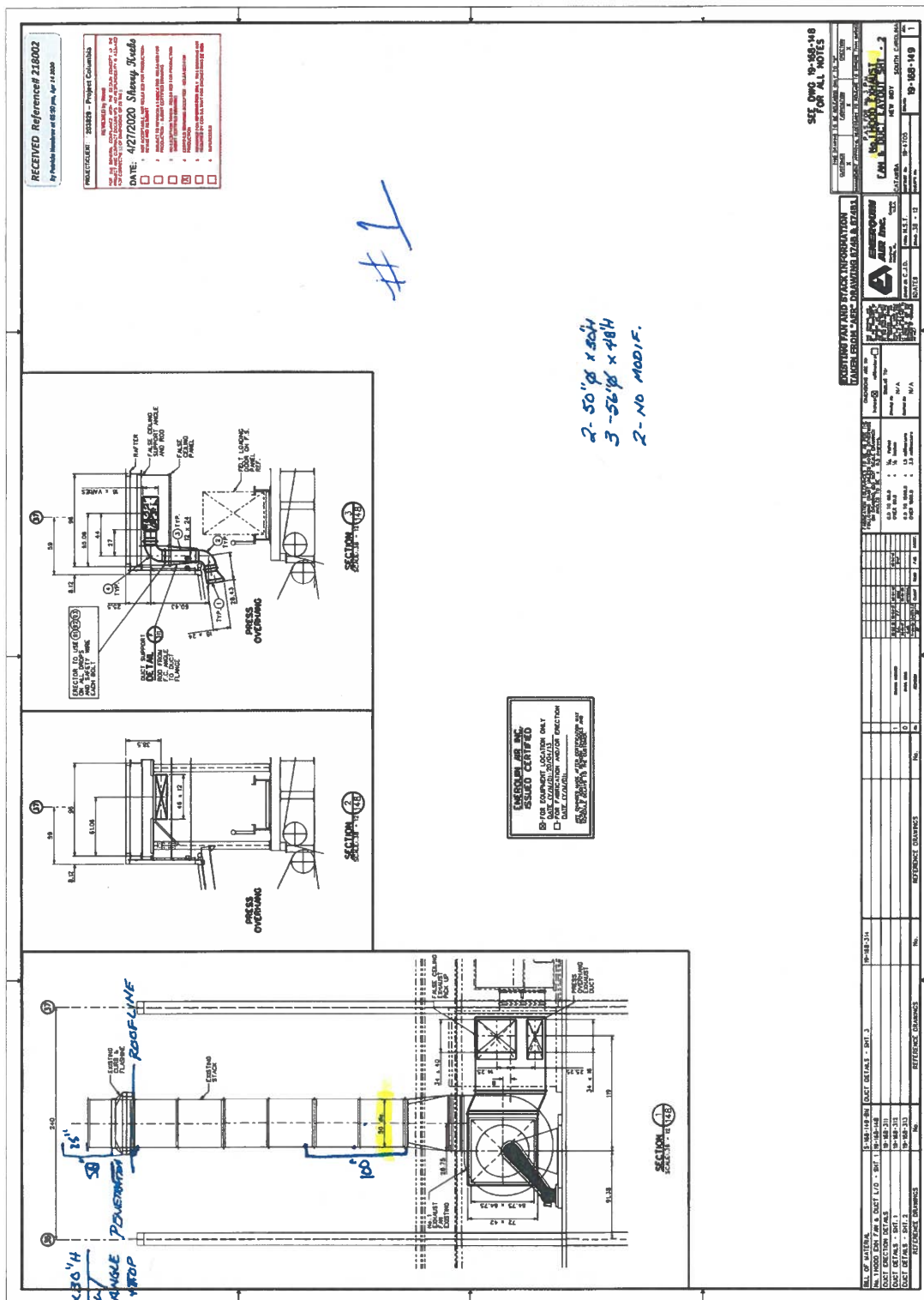
	1	2	3	4	5	6	7	8	9	10	11	12
T	1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
r	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6
a	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7
v	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8
L	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9
e	6						91.7	78.6	68.8	61.1	55.0	50.0
o	7							92.9	81.3	72.2	65.0	59.1
r	8								93.8	83.3	75.0	68.2
c	9									94.4	85.0	77.3
s	10										95.0	86.4
a	11											95.5
e	12											

Rectangular Stack Points & Matrix

9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Port Diam. (in) = 4
Number of Ports = 2

Tape Measure I.D. # TM-07



RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 07:55 End Time 08:55

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.50~~ 0.57
0.42 ppm
97.6 %
0.43 ppm

A3
9/12/9 ✓

0.57
0.58

A3
9/1/5 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 09:00 End Time 10:00

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.54~~ 0.62

0.47 ppm

97.6 %

0.48 ppm

~~0.55~~

0.64

AB
9/22 ✓

AB
9/15 ✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 10:05 End Time 11:05

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.67~~ 0.67

0.56 ppm

97.6 %

~~0.57~~ ppm

AB
9/29

~~0.63~~ 0.69

AB
9/15 ✓

RUN DATA

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1
Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
07:55	<2		0.071	<2		0.082	<2		0.07	<2		0.024	0.27
07:58	<2		0.071	<2		0.082	<2		0.07	<2		0.024	0.27
08:01	19	0.24		6	0.15		27	0.28		<2		0.024	0.72
08:04	<2		0.071	<2		0.082	10	0.17		<2		0.024	0.37
08:07	<2		0.071	20	0.28		<2		0.07	<2		0.024	0.47
08:10	12	0.18		<2		0.082	<2		0.07	<2		0.024	0.38
08:13	24	0.27		16	0.24		33	0.32		<2		0.024	0.87
08:16	10	0.17		<2		0.082	<2		0.07	33	0.11		0.54
08:19	10	0.16		<2		0.082	8	0.15		<2		0.024	0.44
08:22	23	0.26		24	0.30		<2		0.07	<2		0.024	0.68
08:25	20	0.24		14	0.23		<2		0.07	49	0.13		0.80
08:28	29	0.29		<2		0.082	<2		0.07	42	0.12		0.69
08:31	17	0.22		37	0.38		<2		0.07	<2		0.024	0.71
08:34	23	0.26		11	0.20		<2		0.07	27	0.10		0.73
08:37	<2		0.071	<2		0.082	25	0.27		<2		0.024	0.47
08:40	19	0.23		<2		0.082	37	0.34		71	0.16		0.98
08:43	21	0.25		12	0.21		<2		0.07	<2		0.024	0.57
08:46	<2		0.071	<2		0.082	<2		0.07	<2		0.024	0.27
08:49	<2		0.071	<2		0.082	54	0.41		<2		0.024	0.61
08:52	24	0.26		<2		0.082	<2		0.07	25	0.09		0.60
Averages													0.57

RUN DATA

Number 2

Client: New Indy
 Location: Catawba, SC
 Source: Paper Machine Vent 1

Project Number: 15730.001.008
 Operator: VD
 Date: 25 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
09:00	5	0.12		<2		0.082	12	0.18		<2		0.024	0.43	
09:03	<2		0.071	<2		0.082	<2		0.07	<2		0.024	0.27	
09:06	12	0.18		65	0.51		<2		0.07	<2		0.024	0.81	
09:09	39	0.34		<2		0.082	<2		0.07	<2		0.024	0.54	
09:12	<2		0.071	<2		0.082	<2		0.07	<2		0.024	0.27	
09:15	11	0.17		9	0.18		<2		0.07	<2		0.024	0.47	
09:18	41	0.35		<2		0.082	<2		0.07	26	0.10		0.69	
09:21	67	0.45		63	0.50		<2		0.07	13	0.07		1.15	
09:24	19	0.23		<2		0.082	<2		0.07	<2		0.024	0.43	
09:27	16	0.21		32	0.35		9	0.16		<2		0.024	0.77	
09:30	23	0.26		16	0.24		<2		0.07	<2		0.024	0.62	
09:33	5	0.11		<2		0.082	10	0.17		<2		0.024	0.41	
09:36	<2		0.071	<2		0.082	<2		0.07	40	0.12		0.46	
09:39	18	0.23		<2		0.082	<2		0.07	<2		0.024	0.43	
09:42	<2		0.071	<2		0.082	<2		0.07	54	0.14		0.51	
09:45	29	0.29		<2		0.082	17	0.22		<2		0.024	0.64	
09:48	17	0.22		<2		0.082	39	0.35		46	0.13		0.91	
09:51	7	0.14		30	0.34		<2		0.07	<2		0.024	0.59	
09:54	24	0.26		7	0.15		<2		0.07	<2		0.024	0.53	
09:57	22	0.25		65	0.51		62	0.44		30	0.10		1.41	
Averages														0.62

RUN DATA

Number 3

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1
Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
10:05	9	0.16		<2		0.082	<2		0.07	<2		0.024	0.36	
10:08	8	0.15		<2		0.082	27	0.28		<2		0.024	0.56	
10:11	40	0.35		<2		0.082	<2		0.07	<2		0.024	0.55	
10:14	29	0.29		11	0.20		18	0.23		<2		0.024	0.77	
10:17	23	0.26		22	0.29		<2		0.07	9	0.05		0.72	
10:20	66	0.45		<2		0.082	<2		0.07	6	0.05		0.69	
10:23	6	0.13		16	0.25		44	0.37		<2		0.024	0.80	
10:26	22	0.25		23	0.29		14	0.20		16	0.07		0.89	
10:29	12	0.18		22	0.29		<2		0.07	<2		0.024	0.58	
10:32	46	0.37		<2		0.082	<2		0.07	18	0.08		0.68	
10:35	14	0.20		32	0.35		24	0.27		<2		0.024	0.87	
10:38	<2		0.071	<2		0.082	<2		0.07	13	0.07		0.36	
10:41	17	0.22		<2		0.082	38	0.34		<2		0.024	0.69	
10:44	10	0.16		<2		0.082	6	0.13		20	0.08		0.54	
10:47	<2		0.071	32	0.35		12	0.19		<2		0.024	0.65	
10:50	16	0.21		25	0.31		11	0.17		18	0.08		0.85	
10:53	<2		0.071	23	0.30		44	0.37		<2		0.024	0.79	
10:56	13	0.19		15	0.24		<2		0.07	<2		0.024	0.55	
10:59	<2		0.071	9	0.18		25	0.27		<2		0.024	0.58	
11:02	61	0.43		<2		0.082	28	0.29		<2		0.024	0.85	
Averages			0.21											0.67

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
07:55	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
07:58	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
08:01	19	0.24	6	0.15	27	0.28	<2	<0.02	0.67
08:04	<2	<0.07	<2	<0.08	10	0.17	<2	<0.02	0.17
08:07	<2	<0.07	20	0.28	<2	<0.07	<2	<0.02	0.28
08:10	12	0.18	<2	<0.08	<2	<0.07	<2	<0.02	0.18
08:13	24	0.27	16	0.24	33	0.32	<2	<0.02	0.82
08:16	10	0.17	<2	<0.08	<2	<0.07	33	0.11	0.39
08:19	10	0.16	<2	<0.08	8	0.15	<2	<0.02	0.31
08:22	23	0.26	24	0.30	<2	<0.07	<2	<0.02	0.56
08:25	20	0.24	14	0.23	<2	<0.07	49	0.13	0.73
08:28	29	0.29	<2	<0.08	<2	<0.07	42	0.12	0.54
08:31	17	0.22	37	0.38	<2	<0.07	<2	<0.02	0.59
08:34	23	0.26	11	0.20	<2	<0.07	27	0.10	0.66
08:37	<2	<0.07	<2	<0.08	25	0.27	<2	<0.02	0.27
08:40	19	0.23	<2	<0.08	37	0.34	71	0.16	0.90
08:43	21	0.25	12	0.21	<2	<0.07	<2	<0.02	0.45
08:46	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
08:49	<2	<0.07	<2	<0.08	54	0.41	<2	<0.02	0.41
08:52	24	0.26	<2	<0.08	<2	<0.07	25	0.09	0.45
Average		0.15		0.10		0.10		0.04	0.42

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
09:00	5	0.12	<2	<0.08	12	0.18	<2	<0.02	0.30
09:03	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
09:06	12	0.18	65	0.51	<2	<0.07	<2	<0.02	0.69
09:09	39	0.34	<2	<0.08	<2	<0.07	<2	<0.02	0.34
09:12	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
09:15	11	0.17	9	0.18	<2	<0.07	<2	<0.02	0.36
09:18	41	0.35	<2	<0.08	<2	<0.07	26	0.10	0.54
09:21	67	0.45	63	0.50	<2	<0.07	13	0.07	1.08
09:24	19	0.23	<2	<0.08	<2	<0.07	<2	<0.02	0.23
09:27	16	0.21	32	0.35	9	0.16	<2	<0.02	0.72
09:30	23	0.26	16	0.24	<2	<0.07	<2	<0.02	0.50
09:33	5	0.11	<2	<0.08	10	0.17	<2	<0.02	0.28
09:36	<2	<0.07	<2	<0.08	<2	<0.07	40	0.12	0.24
09:39	18	0.23	<2	<0.08	<2	<0.07	<2	<0.02	0.23
09:42	<2	<0.07	<2	<0.08	<2	<0.07	54	0.14	0.28
09:45	29	0.29	<2	<0.08	17	0.22	<2	<0.02	0.51
09:48	17	0.22	<2	<0.08	39	0.35	46	0.13	0.83
09:51	7	0.14	30	0.34	<2	<0.07	<2	<0.02	0.48
09:54	24	0.26	7	0.15	<2	<0.07	<2	<0.02	0.42
09:57	22	0.25	65	0.51	62	0.44	30	0.10	1.41
Average		0.19		0.14		0.08		0.03	0.47

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
10:05	9	0.16	<2	<0.08	<2	<0.07	<2	<0.02	0.16
10:08	8	0.15	<2	<0.08	27	0.28	<2	<0.02	0.43
10:11	40	0.35	<2	<0.08	<2	<0.07	<2	<0.02	0.35
10:14	29	0.29	11	0.20	18	0.23	<2	<0.02	0.72
10:17	23	0.26	22	0.29	<2	<0.07	9	0.05	0.65
10:20	66	0.45	<2	<0.08	<2	<0.07	6	0.05	0.54
10:23	6	0.13	16	0.25	44	0.37	<2	<0.02	0.75
10:26	22	0.25	23	0.29	14	0.20	16	0.07	0.89
10:29	12	0.18	22	0.29	<2	<0.07	<2	<0.02	0.47
10:32	46	0.37	<2	<0.08	<2	<0.07	18	0.08	0.53
10:35	14	0.20	32	0.35	24	0.27	<2	<0.02	0.82
10:38	<2	<0.07	<2	<0.08	<2	<0.07	13	0.07	0.13
10:41	17	0.22	<2	<0.08	38	0.34	<2	<0.02	0.56
10:44	10	0.16	<2	<0.08	6	0.13	20	0.08	0.46
10:47	<2	<0.07	32	0.35	12	0.19	<2	<0.02	0.54
10:50	16	0.21	25	0.31	11	0.17	18	0.08	0.85
10:53	<2	<0.07	23	0.30	44	0.37	<2	<0.02	0.67
10:56	13	0.19	15	0.24	<2	<0.07	<2	<0.02	0.43
10:59	<2	<0.07	9	0.18	25	0.27	<2	<0.02	0.46
11:02	61	0.43	<2	<0.08	28	0.29	<2	<0.02	0.72
Average		0.20		0.15		0.16		0.02	0.56

RUN DATA

Number 14

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
Calibration drift check									
20:16	14345	7.84	<2	<0.08	<2	<0.07	<2	<0.02	7.84
20:19	14713	7.94	<2	<0.08	<2	<0.07	<2	<0.02	7.94
20:22	14122	7.77	<2	<0.08	<2	<0.07	<2	<0.02	7.77
Average		7.85		<0.08		<0.07		<0.02	7.85

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Before Run 1
Start Time 07:25 End Time 07:33

Recovery Gas to Probe, Time 07:25

Peak Areas, mv-sec			Average	ppm
14784	14214	14219	14406	7.85

Recovery Gas to GC, Time 07:29

Peak Areas, mv-sec			Average	ppm
14953	14792	14800	14848	7.98

Recovery 98.4%

WJH

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

After Run 3 Before Run 4
Start Time 11:06 End Time 11:15

Recovery Gas to Probe, Time 11:06

Peak Areas, mv-sec			Average	ppm
13991	13801	13923	13905	7.71

Recovery Gas to GC, Time 11:12

Peak Areas, mv-sec			Average	ppm
14345	14801	14524	14556	7.90

Recovery 97.6%

WTH

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1 Flow = 42.9 mL/Min	10.7 ppm	10.7 ppm	6.95 ppm	5.41 ppm
Time: 06:02	Peak Areas, mv-sec			
	25099	20594	10407	44232
	24750	21533	10445	46016
	25597	21979	10703	45950
Average Area	25149	21369	10519	45399

2 Flow = 82.8 mL/Min	5.56 ppm	5.52 ppm	3.60 ppm	2.80 ppm
Time: 06:53	Peak Areas, mv-sec			
	7926	6406	2923	14068
	7950	6306	2884	13591
	8444	6460	2990	14698
Average Area	8107	6390	2932	14119

3 Flow = 130 mL/Min	3.54 ppm	3.52 ppm	2.29 ppm	1.79 ppm
Time: 07:08	Peak Areas, mv-sec			
	3069	2599	1371	5786
	3064	2578	1331	5729
	3088	2512	1340	5842
Average Area	3074	2563	1347	5786

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CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

H₂S	1	2	3		
Time	06:02	06:53	07:08		
Concentration, ppm	10.7	5.56	3.54		
Area, mv-sec	25149	8107	3074		
Calc. Conc., ppm	10.6	5.79	3.46		
% Error	-1.6	4.2	-2.4		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8847	2.4717	0.9980	2	0.07
MeSH	1	2	3		
Time	06:02	06:53	07:08		
Concentration, ppm	10.7	5.52	3.52		
Area, mv-sec	21369	6390	2563		
Calc. Conc., ppm	10.6	5.62	3.48		
% Error	-0.7	1.8	-1.1		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9089	2.3742	0.9996	2	0.08
DMS	1	2	3		
Time	06:02	06:53	07:08		
Concentration, ppm	6.95	3.60	2.29		
Area, mv-sec	10519	2932	1347		
Calc. Conc., ppm	7.00	3.53	2.32		
% Error	0.8	-2.0	1.2		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8617	2.4483	0.9995	2	0.07
DMDS	1	2	3		
Time	06:02	06:53	07:08		
Concentration, ppm	5.41	2.80	1.79		
Area, mv-sec	45399	14119	5786		
Calc. Conc., ppm	5.37	2.86	1.77		
% Error	-0.8	2.0	-1.2		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8537	3.3043	0.9995	2	0.02

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1	Flow = 43.6 mL/Min	10.5 ppm	10.5 ppm	6.82 ppm	5.31 ppm
	Time: 19:32	Peak Areas, mv-sec			
		23668	22380	10086	46114
		24884	23771	10653	47622
		24624	24375	10810	50274
	Average Area	24392	23509	10516	48003

2	Flow = 65.8 mL/Min	6.99 ppm	6.95 ppm	4.53 ppm	3.53 ppm
	Time: 19:43	Peak Areas, mv-sec			
		14069	11744	5164	24545
		13746	12537	5293	24899
		13905	12112	5280	24958
	Average Area	13907	12131	5246	24800

3	Flow = 123 mL/Min	3.74 ppm	3.71 ppm	2.42 ppm	1.88 ppm
	Time: 19:59	Peak Areas, mv-sec			
		4288	3691	1547	7409
		4623	3823	1561	7662
		4672	3745	1545	7541
	Average Area	4527	3753	1551	7538

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

H₂S	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	10.5	6.99	3.74		
Area, mv-sec	24392	13907	4527		
Calc. Conc., ppm	10.3	7.29	3.68		
% Error	-2.5	4.3	-1.6		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.6380	2.7299	0.9976	2	0.03

MeSH	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	10.5	6.95	3.71		
Area, mv-sec	23509	12131	3753		
Calc. Conc., ppm	10.3	7.11	3.68		
% Error	-1.4	2.4	-0.9		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7779	2.5690	0.9992	2	0.05

DMS	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	6.82	4.53	2.42		
Area, mv-sec	10516	5246	1551		
Calc. Conc., ppm	6.73	4.63	2.40		
% Error	-1.3	2.2	-0.9		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8539	2.4865	0.9993	2	0.07

DMDS	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	5.31	3.53	1.88		
Area, mv-sec	48003	24800	7538		
Calc. Conc., ppm	5.23	3.62	1.86		
% Error	-1.6	2.7	-1.0		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7949	3.3916	0.9990	2	0.02

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ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642	901	758	895
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg Ambient Temperature: 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70) \\ = 460 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

File: E:\6-25-21.trs
Program Version: 2.0, built 21 Feb 2015 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press.	Flow		
	psi	mL/min		
H ₂	30	50	Column: 100	Primary: 3'
Air	30	60	Detector: 120	Secondary:
Carrier	50	30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent |**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 1 Run 1				
09:07:29	6776	20.2	40	0.2
09:07:44	6774	20.2	41	0.2
09:07:59	6775	20.2	40	0.2
09:08:14	6774	20.2	43	0.2
09:08:29	6776	20.2	42	0.2
09:08:44	6773	20.2	43	0.2
09:08:59	6776	20.2	43	0.2
09:09:14	6777	20.2	43	0.2
09:09:29	6776	20.2	43	0.2
09:09:44	6773	20.2	42	0.2
09:09:59	6775	20.2	42	0.2
09:10:14	6775	20.2	40	0.2
09:10:29	6775	20.2	41	0.2
09:10:44	6773	20.2	41	0.2
09:10:59	6774	20.2	41	0.2
09:11:14	6774	20.2	39	0.2
09:11:29	6774	20.2	42	0.2
Avg	6775	20.2	42	0.2

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 1**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 1 Run 2				
10:12:11	6777	20.2	36	0.2
10:12:26	6776	20.2	38	0.2
10:12:41	6774	20.2	37	0.2
10:12:56	6777	20.2	36	0.2
10:13:11	6774	20.2	37	0.2
10:13:26	6776	20.2	38	0.2
10:13:41	6775	20.2	37	0.2
10:13:56	6777	20.2	37	0.2
10:14:11	6775	20.2	37	0.2
10:14:26	6774	20.2	37	0.2
10:14:41	6773	20.2	38	0.2
10:14:56	6776	20.2	36	0.2
10:15:11	6776	20.2	36	0.2
10:15:26	6775	20.2	37	0.2
10:15:41	6774	20.2	36	0.2
10:15:56	6774	20.2	35	0.2
10:16:11	6776	20.2	37	0.2
10:16:26	6775	20.2	38	0.2
10:16:41	6773	20.2	37	0.2
10:16:56	6776	20.2	36	0.2
Avg	6775	20.2	37	0.2

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 1**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 1 Run 3				
11:20:14	6778	20.2	37	0.2
11:20:29	6777	20.2	35	0.2
11:20:44	6776	20.2	36	0.2
11:20:59	6778	20.2	33	0.2
11:21:14	6776	20.2	34	0.2
11:21:29	6778	20.2	33	0.2
11:21:44	6775	20.2	33	0.2
11:21:59	6777	20.2	35	0.2
11:22:14	6776	20.2	34	0.2
11:22:29	6775	20.2	34	0.2
11:22:44	6773	20.2	35	0.2
11:22:59	6778	20.2	35	0.2
11:23:14	6777	20.2	34	0.2
11:23:29	6775	20.2	34	0.2
11:23:44	6774	20.2	33	0.2
11:23:59	6776	20.2	35	0.2
11:24:14	6775	20.2	35	0.2
11:24:29	6776	20.2	35	0.2
11:24:44	6774	20.2	34	0.2
11:24:59	6775	20.2	34	0.2
11:25:14	6776	20.2	34	0.2
Avg	6776	20.2	34	0.2

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
11:31:32	3335	10.0	3225	9.9
11:31:47	3332	10.0	3232	9.9
11:32:02	3330	10.0	3232	9.9
11:32:17	3330	10.0	3236	9.9
Cylinder # SG9168283BAL 10.12 O2 and 10.16 CO2				
11:32:32	3328	10.0	3235	9.9
11:32:47	3328	10.0	3238	9.9
11:33:02	3330	10.0	3237	9.9
11:33:17	3329	10.0	3237	9.9
11:33:32	3327	10.0	3240	9.9
11:33:47	3329	10.0	3241	9.9
11:34:02	3328	10.0	3237	9.9
11:34:17	3330	10.0	3242	9.9
11:34:32	3329	10.0	3239	9.9
11:34:47	3328	10.0	3238	9.9
11:35:02	3331	10.0	3239	9.9
11:35:17	3331	10.0	3238	9.9
11:35:32	3333	10.0	3235	9.9
11:35:47	3334	10.0	3235	9.9
Avg	3330	10.0	3236	9.9

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:20

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	8
10.1 ✓	SG9168283BAL	3287
19.5 ✓	CC454190	6576

Curve Coefficients

Slope	Intercept	Corr. Coeff.
336.7 ✓	-31 ✓	0.9998 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	5
10.2 ✓	SG9168283BAL	3276
20.4 ✓	CC454190	6722

Curve Coefficients

Slope	Intercept	Corr. Coeff.
329.3 ✓	-20 ✓	0.9999 ✓

Handwritten signature

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:20

O₂

Method: EPA 3A
Span Conc. 19.5 %

Slope 336.7 Intercept -31.5

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	8	0.1	0.1	0.5 ✓	Pass
10.1	3287	9.9	-0.2	-1.0 ✓	Pass
19.5	6576	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.4 %

Slope 329.3 Intercept -19.9

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	5	0.1	0.1	0.5 ✓	Pass
10.2	3276	10.0	-0.2	-1.0 ✓	Pass
20.4	6722	20.5	0.1	0.5 ✓	Pass

mm

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-25-21.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 2

New Indy
Catawba, SC

15730.001.008
No. 2 Hood Exhaust
Paper Machine Vent 2

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21 ✓	6/24/21 ✓	6/24/21 ✓	---
Time Began	1310 ✓	1416 ✓	1522 ✓	---
Time Ended	1410 ✓	1516 ✓	1622 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	5.20E+04 ✓	5.26E+04 ✓	5.45E+04 ✓	5.30E+04
BWS	0.202 ✓	0.187 ✓	0.187 ✓	0.192
% Oxygen	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Recovery, %	98.0 ✓	98.0 ✓	98.0 ✓	98.0
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	0.82 ✓	0.78 ✓	0.72 ✓	0.77
Emission Rate, lb/hr	0.23	0.22	0.21	0.22
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.30 ✓	0.20 ✓	0.26 ✓	0.25
Concentration, ppm (Corrected for Recovery)	0.31	0.20	0.27	0.26
Emission Rate, lb/hr	0.08	0.06	0.08	0.07

New Indy
Catawba, SC

15730.001.008
No. 2 Hood Exhaust

Paper Machine Vent 2

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/24/21	6/24/21	6/24/21	---
Time Began	1310	1416	1522	---
Time Ended	1401	1508	1613	---

INPUT DATA

Sampling Time, min	(Theta)	48.0	48	48	48
Stack Diameter, in.	(Dia.)	55.875	55.875	55.875	55.875
Barometric Pressure, in. Hg	(Pb)	29.70	29.70	29.70	29.70
Static Pressure, in. H2O	(Pg)	-0.82	-0.82	-0.82	-0.82
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030	1.0030	1.0030	1.0030
Orifice Calibration Value	(Delta H@)	1.8000	1.8000	1.8000	1.8000
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft ³	(Vm)	30.104	30.681	30.709	30.498
Meter Temperature, °F	(Tm)	89.3	87.4	87.8	88.2
Meter Temperature, °R	(Tm-R)	549.3	547.4	547.8	548.2
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	155.6	144.8	144.0	148.1
CO2 Concentration, %	(CO2)	0.2	0.2	0.2	0.2
O2 Concentration, %	(O2)	20.2	20.2	20.2	20.2
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	1.207	1.202	1.244	1.218
Stack Temperature, °F	(Ts)	178.2	178.4	179.1	178.6
Stack Temperature, °R	(Ts-R)	638.2	638.4	639.1	638.6
Moisture Fraction (at Saturation)	(BWS)	0.496	0.498	0.506	0.500

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	17.03	17.03	17.03	17.03
Stack Pressure, in. Hg	(Ps)	29.64	29.64	29.64	29.64
Meter Pressure, in. Hg	(Pm)	29.80	29.80	29.80	29.80
Standard Meter Volume, ft ³	(Vmstd)	28.891	29.547	29.553	29.330
Standard Water Volume, ft ³	(Vwstd)	7.324	6.816	6.778	6.973
Moisture Fraction (Measured)	(BWS)	0.202	0.187	0.187	0.192
Moisture Fraction (lower sat/meas)	(BWS)	0.202	0.187	0.187	0.192
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.65	26.81	26.82	26.76
Average Stack Gas Velocity, ft/sec	(Vs)	77.94	77.40	80.12	78.49
Stack Gas Flow, actual, ft ³ /min	(Qa)	79629	79074	81860	80188
Stack Gas Flow, Std, ft ³ /min	(Qs)	52043	52622	54475	53047
Calibration check	(Yqa)	1.0420	1.0207	1.0201	1.028
Percent difference from Y					2.45%

Adj for SHV

No. 2 Hood Exhaust

55.875 dia

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indyl
Location/Plant Catawba, SC
Source No. 2 Hood Exhaust
Sample Location 15730.001.008
W. O. Number 1
Run Number 6/24/21
Date
Test Personnel BGA/BE
Sample Time 46 min.

Console ID A023
Meter Corr., Y 1.003
Console ΔH@ 1.800
Probe ID/Length PP6C-6'
Liner Material SS
Pitot ID/Coeff. P77 0.84
Thermo ID A023
Nozzle ID/Diams.
Avg. Nozzle Diam. .250 in.

Ambient Temp. 79 °F
Baro. Pressure* 29.70 in. Hg
Static Pressure* .82 in. H₂O
Impinger Gain 149.2 mL
Silica Gel Gain 6.1 g
Stack Area 17.03 ft²

K Factor N/A

Leak Checks

	Initial	Final
Volume, ft ³	0.002	0.000
@ Vac., in. Hg	12"	5"
Pitot	Good	Good

Filter ID N/A
Sample ID Run 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	13:10			638.696									
	3		1.5	1.3	640.4	178	N/A	89	250	245	N/A	62	3	
	6		1.7	1.3	642.3	178		89	250	244		53	3	
	9		1.7	1.3	644.1	178		90	250	243		49	3	
	12		1.7	1.3	646.0	178		90	250	241		48	3	
	15		1.6	1.3	648.0	178		90	252	247		48	3	
	18		1.6	1.3	649.7	178		90	254	248		49	3	
	21		1.3	1.3	651.6	179		90	249	246		50	3	
	24		1.3	1.3	653.6	180		89	253	246		49	3	
B-1	27		1.2	1.3	655.5	178		89	255	242		53	3	
	30		1.2	1.3	657.4	179		87	250	245		50	3	
	33		1.4	1.3	659.3	179		89	251	244		50	3	
	36		1.4	1.3	661.2	179		89	251	245		49	3	
	39		1.4	1.3	663.1	178		89	252	245		49	3	
	42		1.4	1.3	664.9	178		89	252	245		50	3	
	45		1.4	1.3	666.8	178		89	253	244		50	3	
	48	14:01	1.6	1.3	668.800	175		89	256	247		51	3	
*Barometric Pressure is at port elevation			Avg ΔP 1.207	Avg ΔH 1.300	Total Volume 30.104	Avg T _s 178.2	Avg T _m 89.3	Min/Max 249/250	Min/Max 241/248	Min/Max	Max Temp 62	Max Temp	Max Vac 3	V _m -std. scf



Integrated Air Services

Comments 1-463

Flue Gas Composition
Oxygen, %
Carbon Dioxide, %
Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
Leak Check, Pre-run
Post-run

Thermocouple Check
Meter Temp., °F
Ref. Temp., °F
Result

15730.001.008
Pole Dryer, #3 Paper Machine,
#2-3 SUTVs, & #1-2 CBs
Emission Report

No. 2 Hood Exhaust

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indv
Location/Plant Catawba, SC
Source No. 2 Hood Exhaust
Sample Location Roof
W. O. Number 15730.001.008
Run Number 2
Date 6/24/21
Test Personnel BEA/RL
Sample Time 48 min.

Console ID A023
Meter Corr., Y 1.003
Console ΔH@ 1.800
Probe ID/Length PR66-6'
Liner Material 55
Pitot ID/Coef. P77 0.84
Thermo ID A023
Nozzle ID/Diams. 0.250 in.

Ambient Temp. 81 °F
Baro. Pressure* 29.70 in. Hg
Static Pressure -.82 in. H₂O
Impinger Gain 136.2 mL
Silica Gel Gain 8.6 g
Stack Area 17.03 ft²
Total Traverse Points 16

K Factor N/A
Leak Checks

	Initial	Final
Volume, ft ³	<u>0.008</u>	<u>0.004</u>
@ Vac., in. Hg	<u>12.1'</u>	<u>12.1'</u>
Pitot	<u>good</u>	<u>good</u>

Filter ID N/A
Sample ID run 2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DCGM INLET TEMP (°F)	DCGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	14:16	1.3	1.3	669.605	178	N/A	88	252	243	N/A	62	2	
2	3		1.2	1.3	671.5	178		88	253	245		60	2	
3	6		1.2	1.3	673.3	178		88	252	246		57	2	
4	9		1.3	1.3	675.3	179		87	254	243		56	2	
5	12		1.4	1.3	677.2	179		87	252	247		56	2	
6	15		1.4	1.3	679.1	179		87	253	249		58	2	
7	18		1.5	1.3	681.1	176		88	256	239		58	2	
8	21		1.6	1.3	683.0	176		88	256	244		59	2	
B-1	24		1.5	1.3	684.0	176		88	256	245		60	2	
2	27		1.5	1.3	686.9	179		87	249	245		62	2	
3	30		1.6	1.3	688.8	179		87	252	241		63	2	
4	33		1.7	1.3	690.7	179		87	250	247		66	2	
5	36		1.7	1.3	692.6	179		87	251	245		67	2	
6	39		1.4	1.3	694.4	180		87	249	245		64	2	
7	42		1.4	1.3	696.3	180		87	251	247		65	2	
8	45		1.4	1.3	698.3	180		87	251	247		62	2	
8	48	15:08	1.4	1.3	700.286	180		87	251	244		62	2	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _i		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-sd} scf
			1.2024	1.3000	30.681	178.4	87.4		249/258	239/247		67	2	



Integrated Air Services

Comments

Flue Gas Composition
Oxygen, %
Carbon Dioxide, %
Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
Leak Check, Pre-run
Post-run

Thermocouple Check
Meter Temp., °F
Ref. Temp., °F
Result

Q_s, dscfm
% Isokinetic
Calculated by
QC by

15730.001.008
Pulp Dryer, Paper Machine,
#2-3 Sides, & #1-2 CBs
Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730.001.008
 Run Number 3
 Date 10/29/21
 Test Personnel BEA/BE
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR66-6-
 Liner Material SS
 Pitot ID/Coeff. P77 0.84
 Thermo ID A023
 Nozzle ID/Diams. .250 in.
 Avg. Nozzle Diam. .250 in.
 Total Traverse Points 16

K Factor N/A
 Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	.004	.002
Pitot	12"	5"
	6000	6000

Filter ID N/A
 Sample ID run 3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAP VACUUM (in. Hg)	COMMENTS
A-1	0	15:22	1.5	1.3	700.564	179	N/A	87	253	247	N/A	67	3	
2	3		1.5	1.3	762.5	180		87	255	246		57	3	
3	6		1.6	1.3	764.5	179		87	252	242		52	3	
4	9		1.6	1.3	706.4	179		88	253	246		51	3	
5	12		1.7	1.3	708.3	180		88	248	242		51	3	
6	15		1.7	1.3	710.3	179		87	251	248		52	3	
7	18		1.7	1.3	712.2	179		87	251	247		52	3	
8	21		1.5	1.3	714.1	179		87	250	245		52	3	
B-1	24		1.5	1.3	716.0	179		88	252	243		55	3	
2	27		1.5	1.3	717.9	179		88	254	245		52	3	
3	30		1.5	1.3	719.8	179		88	250	241		51	3	
4	33		1.5	1.3	721.7	179		88	249	242		52	3	
5	36		1.6	1.3	723.6	179		88	251	247		53	3	
6	39		1.6	1.3	725.5	179		89	251	247		53	3	
7	42		1.5	1.3	727.4	179		89	252	248		54	3	
8	45		1.5	1.3	729.3	179		89	254	246		53	3	
8	48	16:13	1.3	1.3	731.273	179		89	254	246		53	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m	Min/Max	Min/Max	Min/Max	Mip/Max	Max Temp	Max Vac	V _m -std
			1.2443	1.300	80.709	179.1	87.8	248/255	241/248	241/248	241/248	67	3	scf



Integrated Air Services

Comments

Flue Gas Composition
 Oxygen, %
 Carbon Dioxide, %
 Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

Q_s, dscfm
 % Isokinetic
 Calculated by
 QC by

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 4 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID Run 1 Filter ID N/A Analyst BA

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	835.1	721.3	560.2		877.9	
Initial	742.4	668.1	556.9		893.5	
Gain	92.7 ✓	53.2 ✓	3.3 ✓	149.2	6.4	155.6

Impinger Color clear ✓ Labeled? ✓ ✓
Silica Gel Condition Good Sealed? ✓ ✓

Run No. 2 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID Run 2 Filter ID N/A Analyst BA

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	868.1	841.8	648.0		874.7	
Initial	752.4	824.3	645.0		866.1	
Gain	115.7 ✓	17.5 ✓	3 ✓	136.2	8.6	144.8

Impinger Color clear ✓ Labeled? ✓ ✓
Silica Gel Condition Good Sealed? ✓ ✓

Run No. 3 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID Run 3 Filter ID N/A Analyst BA

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	868.5	696.7	553.9		905.0	
Initial	760.2	669.1	550.9		899.9	
Gain	108.3 ✓	27.6 ✓	3 ✓	138.9	5.1	144.0

Impinger Color Clear ✓ Labeled? ✓ ✓
Silica Gel Condition Good Sealed? ✓ ✓

Check COC for Sample IDs of Media Blanks



Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
 Philip Meyer, #3 Paper Machine,
 #2-3 SDTVs, & #1-2 CBs
 Emission Report

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Hood Exhaust

Operator VD / LF
 Date 15-Jun-21
 W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
 Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	56.000
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	55.875
Area of Duct (ft ²)	17.03
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)

Total Ports (rectangular duct only)

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	6	6
3	19.4	11	11
4	32.3	18	18
5	67.7	38	38
6	80.6	45	45
7	89.5	50	50
8	96.8	54	54
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

Traverse Point Location Percent of Stack -Circular

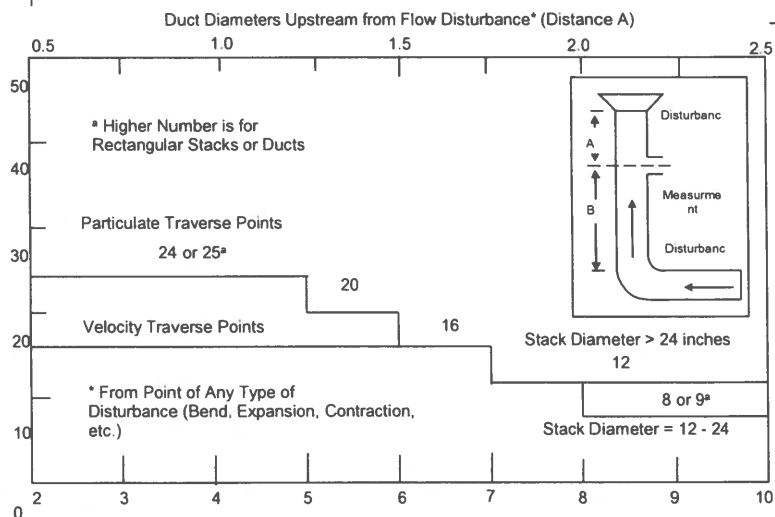
Number of Traverse Points

	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3				75		29.6		19.4		14.6		11.8
4				93.3		70.4		32.3		22.6		17.7
5						85.4		67.7		34.2		25
6						95.6		80.6		65.8		35.6
7								89.5		77.4		64.4
8								96.8		85.4		75
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Flow Disturbances

Upstream - A (ft)	7.208
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.55
Downstream - B (duct diameters)	5.37

Diagram of Stack



Traverse Point Location Percent of Stack -Rectangular

Number of Traverse Points

	1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular Stack Points & Matrix
 9 - 3 x 3
 12 - 4 x 3
 16 - 4 x 4
 20 - 5 x 4
 25 - 5 x 5
 30 - 6 x 5
 36 - 6 x 6
 42 - 7 x 6
 49 - 7 x 7

Port Diam. (in) = 4
 Number of Ports = 2

Tape Measure I.D. # TM-07



RUN SUMMARY

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 13:10 End Time 14:10

Average Measured TRS Conc.

Recovery No. 3

TRS Corrected for Recovery

~~0.77~~ 0.80

0.67 ppm

98.0 %

0.68 ppm

~~0.74~~ 0.82

AB
9129 ✓

AB
9115 ✓

RUN SUMMARY

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 14:16 End Time 15:16

Average Measured TRS Conc.

~~0.61~~ 0.76
0.61 ppm

Recovery No. 3

98.0 %

TRS Corrected for Recovery

~~0.62~~
0.70
0.78
0.62 ppm

AB
9/129✓

AB
9/115✓

RUN SUMMARY

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 15:22 End Time 16:22

Average Measured TRS Conc.
Recovery No. 3
TRS Corrected for Recovery

~~0.69~~ 0.71

0.56 ppm

98.0 %

0.57 ppm

~~0.65~~ 0.72

AB
9/29 ✓

AB
9/15 ✓

RUN DATA

Number 4

Client: **New Indy** Project Number: **15730.001.008**
Location: **Catawba, SC** Operator: **VD**
Source: **Paper Machine Vent 3** Method: **16** Date: **24 Jun 2021**
Calibration: **1**

Time	H ₂ S			MeSH			DMS			DMSD			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
Run 1 on PM vent 2															
13:10	31	0.32		4	0.13		8	0.18		29	0.11		0.86		
13:13	26	0.29		10	0.22		<2			<2			0.66		
13:16	14	0.21		44	0.45		<2			<2			0.81		
13:19	23	0.27		9	0.21		<2			<2			0.63		
13:22	13	0.20		18	0.29		<2			<2			0.64		
13:25	10	0.17		27	0.35		<2			<2			0.67		
13:28	36	0.35		9	0.20		<2			20	0.09		0.82		
13:31	10	0.17		7	0.18		<2			11	0.07		0.58		
13:34	78	0.53		60	0.53		<2			<2			1.20		
13:37	8	0.15		19	0.30		37	0.40		31	0.12		1.09		
13:40	10	0.18		<2		0.095	<2			15	0.08		0.52		
13:43	8	0.16		66	0.56		<2			<2			0.86		
13:46	24	0.28		24	0.33		14	0.24		<2			0.91		
13:49	6	0.14		<2		0.095	<2			28	0.11		0.55		
13:52	217	0.90		<2		0.095	<2			<2			1.14		
13:55	64	0.47		<2		0.095	19	0.29		<2			0.91		
13:58	24	0.29		15	0.26		<2			<2			0.69		
14:01	14	0.21		16	0.27		<2			16	0.08		0.73		
14:04	16	0.23		25	0.34		<2			<2			0.72		
14:07	55	0.44		25	0.34		<2			<2			0.92		
Averages		0.30											0.80		

RUN DATA

Number 5

Client: New Indy
 Location: Catawba, SC
 Source: Paper Machine Vent 3

Project Number: 15730.001.008
 Operator: VD
 Date: 24 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
Run 2 PM vent 2															
14:16	<2		0.076	<2		0.095	<2		0.091	<2		0.027			0
14:19	17	0.23		9	0.20				0.091	5	0.04			0.32	0.61
14:22	91	0.57		<2		0.095	31	0.37		<2		0.027		1.08	
14:25	59	0.45		25	0.34		<2		0.091	<2		0.027		0.94	
14:28	19	0.25		<2		0.095	13	0.24		13	0.07			0.73	
14:31	6	0.13		40	0.43		<2		0.091	25	0.10			0.86	
14:34	<2		0.076	<2		0.095	12	0.22		11	0.07			0.53	
14:37	4	0.11		253	1.10		<2		0.091	<2		0.027		1.35	
14:40	20	0.26		25	0.34		5	0.14		62	0.17			1.07	
14:43	<2		0.076	<2		0.095	<2		0.091	17	0.09			0.43	
14:46	<2		0.076	50	0.48		22	0.31		49	0.15			1.16	
14:49	<2		0.076	<2		0.095	<2		0.091	<2		0.027		0.32	
14:52	<2		0.076	7	0.17		<2		0.091	15	0.08			0.50	
14:55	<2		0.076	83	0.62		56	0.50		<2		0.027		1.25	
14:58	97	0.59		<2		0.095	<2		0.091	<2		0.027		0.83	
15:01	32	0.33		<2		0.095	34	0.39		18	0.09			0.98	
15:04	9	0.17		17	0.28		10	0.21		13	0.07			0.80	
15:07	<2		0.076	<2		0.095	<2		0.091	<2		0.027		0.32	
15:10	9	0.17		6	0.17		<2		0.091	<2		0.027		0.48	
15:13	13	0.20		7	0.18		13	0.24		<2		0.027		0.68	
Averages			0.20											0.76	

RUN DATA

Number 6

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 3
Project Number: 15730.001.008
Operator: VD
Date: 24 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
Run 3 PM vent 2														
15:22	8	0.16		<2		0.095	<2		0.091	<2		0.027	0.40	0
15:25	14	0.22		14	0.26		41	0.42		<2		0.027	0.95	
15:28	266	1.00		<2		0.095	<2		0.091	<2		0.027	1.24	
15:31	9	0.17		<2		0.095	43	0.43		11	0.07		0.83	
15:34	12	0.20		5	0.16		18	0.28		<2		0.027	0.69	
15:37	13	0.21		7	0.18		9	0.20		17	0.08		0.76	
15:40	58	0.45		24	0.33		<2		0.091	<2		0.027	0.92	
15:43	154	0.75		<2		0.095	21	0.30		<2		0.027	1.21	
15:46	3	0.09		43	0.45		<2		0.091	22	0.10		0.82	
15:49	7	0.15		8	0.19		<2		0.091	<2		0.027	0.48	
15:52	8	0.16		9	0.20		<2		0.091	43	0.14		0.73	
15:55	15	0.22		<2		0.095	11	0.21		<2		0.027	0.58	
15:58	14	0.22		13	0.24		<2		0.091	<2		0.027	0.60	
16:01	32	0.33		<2		0.095	<2		0.091	<2		0.027	0.57	
16:04	<2		0.076	<2		0.095	33	0.38		<2		0.027	0.60	
16:07	24	0.29		5	0.15		<2		0.091	<2		0.027	0.58	
16:10	10	0.17		<2		0.095	<2		0.091	9	0.06		0.48	
16:13	<2		0.076	12	0.24		<2		0.091	<2		0.027	0.46	
16:16	9	0.17		22	0.32		5	0.15		<2		0.027	0.69	
16:19	<2		0.076	<2		0.095	<2		0.091	60	0.16		0.59	
Averages			0.26											0.71

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent #2**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S area ppm	MeSH area ppm	DMS area ppm	DMDS area ppm	TRS ppm
Run 1 on PM vent 2					
13:10	31 0.32	4 0.13	8 0.18	29 0.11	0.86
13:13	26 0.29	10 0.22	<2 <0.091	<2 <0.027	0.51
13:16	14 0.21	44 0.45	<2 <0.091	<2 <0.027	0.66
13:19	23 0.27	9 0.21	<2 <0.091	<2 <0.027	0.48
13:22	13 0.20	18 0.29	<2 <0.091	<2 <0.027	0.49
13:25	10 0.17	27 0.35	<2 <0.091	<2 <0.027	0.53
13:28	36 0.35	9 0.20	<2 <0.091	20 0.09	0.73
13:31	10 0.17	7 0.18	<2 <0.091	11 0.07	0.49
13:34	78 0.53	60 0.53	<2 <0.091	<2 <0.027	1.06
13:37	8 0.15	19 0.30	37 0.40	31 0.12	1.09
13:40	10 0.18	<2 <0.095	<2 <0.091	15 0.08	0.34
13:43	8 0.16	66 0.56	<2 <0.091	<2 <0.027	0.71
13:46	24 0.28	24 0.33	14 0.24	<2 <0.027	0.85
13:49	6 0.14	<2 <0.095	<2 <0.091	28 0.11	0.36
13:52	217 0.90	<2 <0.095	<2 <0.091	<2 <0.027	0.90
13:55	64 0.47	<2 <0.095	19 0.29	<2 <0.027	0.76
13:58	24 0.29	15 0.26	<2 <0.091	<2 <0.027	0.54
14:01	14 0.21	16 0.27	<2 <0.091	16 0.08	0.64
14:04	16 0.23	25 0.34	<2 <0.091	<2 <0.027	0.57
14:07	55 0.44	25 0.34	<2 <0.091	<2 <0.027	0.78
Average	0.30	0.25	<0.091	0.03	0.67

sf

RUN DATA

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *32*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
Run 2 PM vent 2									
14:16	<2	<0.076	<2	<0.095	<2	<0.091	<2	<0.027	-
14:19	17	0.23	9	0.20	<2	<0.091	5	0.04	0.52
14:22	91	0.57	<2	<0.095	31	0.37	<2	<0.027	0.93
14:25	59	0.45	25	0.34	<2	<0.091	<2	<0.027	0.79
14:28	19	0.25	<2	<0.095	13	0.24	13	0.07	0.64
14:31	6	0.13	40	0.43	<2	<0.091	25	0.10	0.77
14:34	<2	<0.076	<2	<0.095	12	0.22	11	0.07	0.36
14:37	4	0.11	253	1.10	<2	<0.091	<2	<0.027	1.21
14:40	20	0.26	25	0.34	5	0.14	62	0.17	1.07
14:43	<2	<0.076	<2	<0.095	<2	<0.091	17	0.09	0.17
14:46	<2	<0.076	50	0.48	22	0.31	49	0.15	1.09
14:49	<2	<0.076	<2	<0.095	<2	<0.091	<2	<0.027	-
14:52	<2	<0.076	7	0.17	<2	<0.091	15	0.08	0.33
14:55	<2	<0.076	83	0.62	56	0.50	<2	<0.027	1.12
14:58	97	0.59	<2	<0.095	<2	<0.091	<2	<0.027	0.59
15:01	32	0.33	<2	<0.095	34	0.39	18	0.09	0.89
15:04	9	0.17	17	0.28	10	0.21	13	0.07	0.80
15:07	<2	<0.076	<2	<0.095	<2	<0.091	<2	<0.027	-
15:10	9	0.17	6	0.17	<2	<0.091	<2	<0.027	0.34
15:13	13	0.20	7	0.18	13	0.24	<2	<0.027	0.62
Average		0.17		0.22		0.13		0.05	0.61 ✓

JK

RUN DATA

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 2**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
Run 3 PM vent 2									
15:22	8	0.16	<2	<0.095	<2	<0.091	<2	<0.027	0.16
15:25	14	0.22	14	0.26	41	0.42	<2	<0.027	0.89
15:28	266	1.00	<2	<0.095	<2	<0.091	<2	<0.027	1.00
15:31	9	0.17	<2	<0.095	43	0.43	11	0.07	0.73
15:34	12	0.20	5	0.16	18	0.28	<2	<0.027	0.63
15:37	13	0.21	7	0.18	9	0.20	17	0.08	0.76
15:40	58	0.45	24	0.33	<2	<0.091	<2	<0.027	0.78
15:43	154	0.75	<2	<0.095	21	0.30	<2	<0.027	1.06
15:46	3	0.09	43	0.45	<2	<0.091	22	0.10	0.73
15:49	7	0.15	8	0.19	<2	<0.091	<2	<0.027	0.33
15:52	8	0.16	9	0.20	<2	<0.091	43	0.14	0.64
15:55	15	0.22	<2	<0.095	11	0.21	<2	<0.027	0.43
15:58	14	0.22	13	0.24	<2	<0.091	<2	<0.027	0.46
16:01	32	0.33	<2	<0.095	<2	<0.091	<2	<0.027	0.33
16:04	<2	<0.076	<2	<0.095	33	0.38	<2	<0.027	0.38
16:07	24	0.29	5	0.15	<2	<0.091	<2	<0.027	0.44
16:10	10	0.17	<2	<0.095	<2	<0.091	9	0.06	0.29
16:13	<2	<0.076	12	0.24	<2	<0.091	<2	<0.027	0.24
16:16	9	0.17	22	0.32	5	0.15	<2	<0.027	0.63
16:19	<2	<0.076	<2	<0.095	<2	<0.091	60	0.16	0.33
Average		0.25		0.14		0.12		0.03	0.56

58

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** 32

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

After Run 3 Before Run 4
Start Time 12:45 End Time 12:55

Recovery Gas to Probe, Time 12:45

Peak Areas, mv-sec			Average	ppm
12908	13446	13416	13257	7.84

Recovery Gas to GC, Time 12:51

Peak Areas, mv-sec			Average	ppm
13746	14196	14064	14002	8.07

Recovery 97.2% ✓

54

RECOVERY DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** ~~3~~ 2

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

After Run 6 Before Run 7
Start Time 16:23 End Time 16:31

Recovery Gas to Probe, Time 16:23

Peak Areas, mv-sec			Average	ppm
13311	13711	14111	13711	7.98

Recovery Gas to GC, Time 16:28

Peak Areas, mv-sec			Average	ppm
14746	14386	13597	14243	8.14

Recovery 98.0% ✓

5/4

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent # 2**

Method **16**

Project Number: **15730.001.008**

Operator: **VD**

Date: **23 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.60 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0

1	Flow = 42.9 mL/Min	10.8 ppm	10.7 ppm	6.97 ppm	5.43 ppm
	Time: 06:01	Peak Areas, mv-sec			
		23635	22744	10268	43754
		23397	21865	10275	43943
		23478	22059	10303	44074
	Average Area	23503	22223	10282	43924

2	Flow = 80.0 mL/Min	5.77 ppm	5.73 ppm	3.73 ppm	2.91 ppm
	Time: 07:13	Peak Areas, mv-sec			
		8086	7277	3039	14674
		7612	6821	2896	13428
		7977	6961	2956	14718
	Average Area	7892	7020	2964	14273

3	Flow = 133 mL/Min	3.46 ppm	3.44 ppm	2.24 ppm	1.74 ppm
	Time: 07:30	Peak Areas, mv-sec			
		2749	2295	1139	5166
		2668	2461	1022	4984
		2689	2285	1136	5151
	Average Area	2702	2347	1099	5100

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent #2**

Method **16**

Project Number: **15730.001.008**

Operator: **VD**

Date: **23 Jun 2021**

H₂S	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	10.8	5.77	3.46		
Area, mv-sec	23503	7892	2702		
Calc. Conc., ppm	10.6	5.97	3.40		
% Error	-1.5	3.5	-1.9 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9001	2.4228	0.9986	2	0.076
MeSH	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	10.7	5.73	3.44		
Area, mv-sec	22223	7020	2347		
Calc. Conc., ppm	10.6	5.89	3.38		
% Error	-1.3	2.9	-1.5 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9758	2.3243	0.9991	2	0.095
DMS	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	6.97	3.73	2.24		
Area, mv-sec	10282	2964	1099		
Calc. Conc., ppm	6.98	3.72	2.25		
% Error	0.2	-0.5	0.3 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9707	2.3484	>0.9999	2	0.091
DMDS	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	5.43	2.91	1.74		
Area, mv-sec	43924	14273	5100		
Calc. Conc., ppm	5.38	2.97	1.72		
% Error	-0.9	2.1	-1.2 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8936	3.2593	0.9995	2	0.027

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent #2**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.60 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0

1 Flow = 44.4 mL/Min	10.4 ppm	10.3 ppm	6.72 ppm	5.23 ppm
Time: 16:34	Peak Areas, mv-sec			
	23321	20338	9959	43670
	24380	21799	10647	46630
	25056	22227	10285	45442
Average Area	24252	21454 ✓	10297	45247

2 Flow = 77.4 mL/Min	5.96 ppm	5.92 ppm	3.86 ppm	3.01 ppm
Time: 16:51	Peak Areas, mv-sec			
	9796	7866	3569	17108
	9812	7920	3556	17604
	9831	7352	3254	15792
Average Area	9813	7713	3460 ✓	16834

3 Flow = 130 mL/Min	3.56 ppm	3.53 ppm	2.30 ppm	1.79 ppm
Time: 17:05	Peak Areas, mv-sec			
	3510	2899	1228	5869
	3467	2681	1272	6176
	3570	2800	1253	6307
Average Area	3516	2793	1251	6117 ✓

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3 2**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

H₂S	1	2	3		
Time	16:34	16:51	17:05		
Concentration, ppm	10.4	5.96	3.56		
Area, mv-sec	24252	9813	3516		
Calc. Conc., ppm	10.2	6.18	3.49		
% Error	-1.7	3.6	-1.8 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8007	2.5680	0.9984	2	0.055
MeSH	1	2	3		
Time	16:34	16:51	17:05		
Concentration, ppm	10.3	5.92	3.53		
Area, mv-sec	21454	7713	2793		
Calc. Conc., ppm	10.3	5.99	3.51		
% Error	-0.6	1.2	-0.6 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9025	2.4083	0.9998	2	0.078
DMS	1	2	3		
Time	16:34	16:51	17:05		
Concentration, ppm	6.72	3.86	2.30		
Area, mv-sec	10297	3460	1251		
Calc. Conc., ppm	6.72	3.86	2.30 ✓		
% Error	-0.0	0.1	-0.0		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9679	2.3846	>0.9999	2	0.087
DMDS	1	2	3		
Time	16:34	16:51	17:05		
Concentration, ppm	5.23	3.01	1.79		
Area, mv-sec	45247	16834	6117		
Calc. Conc., ppm	5.19	3.06	1.78		
% Error	-0.8	1.7	-0.9 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8669	3.3201	0.9996	2	0.024

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent #2**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 ✓	901 ✓	758 ✓	895 ✓
Permeation Rate, nL/min*	461	458	299	233

Barometric Pressure: 29.60 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.60) \\ = 461 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3 2**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

File: E:\6-24-21.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press. psi	Flow mL/min		
H ₂	30	50	Column: 100	Primary: 3'
Air	30	60	Detector: 120	Secondary:
Carrier	50	30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.60 in. Hg

RUN DATA

Number 7

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3¹/₂**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
Post test drift									
17:22	13670	7.97	<2	<0.095	<2	<0.091	<2	<0.027	7.97
17:23	13643	7.96	<2	<0.095	<2	<0.091	<2	<0.027	7.96
17:25	13246	7.84	<2	<0.095	<2	<0.091	<2	<0.027	7.84
Average		7.92		<0.095		<0.091		<0.027	7.92 ✓

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 2 Run 1				
14:37:42	6760	20.2	-18	0.2
14:37:57	6760	20.2	-18	0.2
14:38:12	6759	20.2	-19	0.2
14:38:27	6762	20.2	-20	0.2
14:38:42	6761	20.2	-19	0.2
14:38:57	6759	20.2	-20	0.2
14:39:12	6760	20.2	-20	0.2
14:39:27	6760	20.2	-19	0.2
14:39:42	6758	20.2	-20	0.2
14:39:57	6761	20.2	-20	0.2
14:40:12	6760	20.2	-19	0.2
14:40:27	6759	20.2	-19	0.2
14:40:42	6759	20.2	-20	0.2
14:40:57	6760	20.2	-20	0.2
Avg	6760	20.2	-19	0.2

RUN DATA

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
15:28:17	6773	20.2	-35	0.2
PM Vent 2 Run 2				
15:28:32	6773	20.2	-35	0.2
15:28:47	6774	20.2	-34	0.2
15:29:02	6774	20.2	-35	0.2
15:29:17	6773	20.2	-35	0.2
15:29:32	6775	20.2	-34	0.2
15:29:47	6774	20.2	-35	0.2
15:30:02	6774	20.2	-35	0.2
15:30:17	6774	20.2	-35	0.2
15:30:32	6773	20.2	-35	0.2
15:30:47	6775	20.2	-35	0.2
15:31:02	6774	20.2	-35	0.2
15:31:17	6774	20.2	-35	0.2
15:31:32	6775	20.2	-35	0.2
15:31:47	6775	20.2	-35	0.2
15:32:02	6775	20.2	-35	0.2
15:32:17	6775	20.2	-35	0.2
15:32:32	6775	20.2	-36	0.2
15:32:47	6773	20.2	-36	0.2
15:33:02	6773	20.2	-35	0.2
15:33:17	6775	20.2	-34	0.2
15:33:32	6774	20.2	-35	0.2
15:33:47	6773	20.2	-35	0.2
15:34:02	6774	20.2	-35	0.2
15:34:17	6773	20.2	-32	0.2
15:34:32	6768	20.2	-29	0.2
Avg	6774	20.2	-35	0.2

RUN DATA

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 2 Run 3				
16:40:11	6779	20.2	-34	0.2
16:40:26	6778	20.2	-34	0.2
16:40:41	6778	20.2	-32	0.2
16:40:56	6776	20.2	-32	0.2
16:41:11	6777	20.2	-32	0.2
16:41:26	6778	20.2	-32	0.2
16:41:41	6777	20.2	-32	0.2
16:41:56	6777	20.2	-31	0.2
16:42:11	6777	20.2	-31	0.2
16:42:26	6778	20.2	-32	0.2
16:42:41	6778	20.2	-33	0.2
16:42:56	6779	20.2	-32	0.2
16:43:11	6778	20.2	-31	0.2
16:43:26	6780	20.2	-32	0.2
16:43:41	6778	20.2	-30	0.2
16:43:56	6777	20.2	-29	0.2
16:44:11	6777	20.2	-31	0.2
16:44:26	6777	20.2	-31	0.2
16:44:41	6777	20.2	-32	0.2
Avg	6778	20.2	-32	0.2

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 10:02

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	13
10.1 ✓	SG9168283BAL	3292
19.5 ✓	CC454190	6577

Curve Coefficients

Slope	Intercept	Corr. Coeff.
336.5 ✓	-26 ✓	0.9998 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-68
10.2 ✓	SG9168283BAL	3027
20.4 ✓	CC454190	6279

Curve Coefficients

Slope	Intercept	Corr. Coeff.
311.1 ✓	-90 ✓	0.9999 ✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 10:02

O₂

Method: EPA 3A
Span Conc. 19.5 %

Slope 336.5 Intercept -25.8

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	13	0.1	0.1	0.5 ✓	Pass
10.1	3292	9.9	-0.2	-1.0 ✓	Pass
19.5	6577	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.4 %

Slope 311.1 Intercept -90.1

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-68	0.1	0.1	0.5 ✓	Pass
10.2	3027	10.0	-0.2	-1.0 ✓	Pass
20.4	6279	20.5	0.1	0.5 ✓	Pass

✓

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-24-21.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 3

New Indy
Catawba, SC

15730.001.008
No. 3 Hood Exhaust
Paper Machine Vent 3

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21 ✓	6/24/21 ✓	6/24/21 ✓	---
Time Began	937 ✓	1042 ✓	1145 ✓	---
Time Ended	1037 ✓	1142 ✓	1245 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	5.45E+04 ✓	5.30E+04 ✓	5.51E+04 ✓	5.42E+04
BWS	0.210 ✓	0.214 ✓	0.196 ✓	0.207
% Oxygen	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Recovery, %	97.2 ✓	97.2 ✓	97.2 ✓	97.2
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	0.95 ✓	0.84 ✓	0.87 ✓	0.89
Emission Rate, lb/hr	0.27	0.24	0.25	0.26
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.29 ✓	0.28 ✓	0.31 ✓	0.29
Concentration, ppm (Corrected for Recovery)	0.30	0.29	0.32	0.30
Emission Rate, lb/hr	0.09	0.08	0.09	0.09

pm

New Indy
Catawba, SC

15730.001.008
No. 3 Hood Exhaust

Paper Machine Vent 3

ISOKINETIC CALCULATIONS

Run Number		1	2	3	Mean
Date		6/24/21 ✓	6/24/21 ✓	6/24/21 ✓	---
Time Began		937 ✓	1042 ✓	1145 ✓	---
Time Ended		1029 ✓	1136 ✓	1236 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	48.0 ✓	48 ✓	48 ✓	48
Stack Diameter, in.	(Dia.)	55.88 ✓	55.88 ✓	55.88 ✓	55.88
Barometric Pressure, in. Hg	(Pb)	29.70 ✓	29.70 ✓	29.70 ✓	29.70
Static Pressure, in. H2O	(Pg)	-1.00 ✓	-1.00 ✓	-1.00 ✓	-1.00
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.0030 ✓	1.0030 ✓	1.0030 ✓	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 ✓	1.8000 ✓	1.8000 ✓	1.8000
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	30.544 ✓	30.347 ✓	30.732 ✓	30.541
Meter Temperature, °F	(Tm)	76.5 ✓	81.6 ✓	87.1 ✓	81.7
Meter Temperature, °R	(Tm-R)	536.5	541.6	547.1	541.7
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2})avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	170.0 ✓	170.6 ✓	153.2 ✓	164.6
CO2 Concentration, %	(CO2)	0.2 ✓	0.2 ✓	0.2 ✓	0.2
O2 Concentration, %	(O2)	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2})avg)	1.282 ✓	1.254 ✓	1.273 ✓	1.270
Stack Temperature, °F	(Ts)	185.0 ✓	186.8 ✓	182.1 ✓	184.6
Stack Temperature, °R	(Ts-R)	645.0	646.8	642.1	644.6
Moisture Fraction (at Saturation)	(BWS)	0.576 ✓	0.599 ✓	0.541 ✓	0.572
CALCULATED DATA					
Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	17.03 ✓	17.03 ✓	17.03 ✓	17.03
Stack Pressure, in. Hg	(Ps)	29.63	29.63	29.63	29.63
Meter Pressure, in. Hg	(Pm)	29.80	29.80	29.80	29.80
Standard Meter Volume, ft ³	(Vmstd)	30.013	29.539	29.613	29.721
Standard Water Volume, ft ³	(Vwstd)	8.002	8.030	7.211	7.748
Moisture Fraction (Measured)	(BWS)	0.210	0.214	0.196	0.207
Moisture Fraction (lower sat/meas)	(BWS)	0.210	0.214	0.196	0.207
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.56	26.52	26.72	26.60
Average Stack Gas Velocity, ft/sec	(Vs)	83.37	81.68	82.34	82.46
Stack Gas Flow, actual, ft ³ /min	(Qa)	85180	83452	84121	84251
Stack Gas Flow, Std, ft ³ /min	(Qs)	54489	53016	55059	54188
Calibration check	(Yqa)	1.0150	1.0264	1.0187	1.020
Percent difference from Y					1.70%

No. 3 Hood Exhaust

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A023	Ambient Temp.	68 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.003	Baro. Pressure*	29.70 in. Hg
Source	No. 3 Hood Exhaust	Console ΔH@	1.500	Static Pressure	-1.0 in. H ₂ O
Sample Location	Roof	Probe ID/Length	PL-16 6'	Impinger Gain	144.8 mL
W. O. Number	15730.001.008	Liner Material	65	Silica Gel Gain	5.5 g
Run Number	1	Pitot ID/Coeff.	P77	Stack Area	17.03 ft ²
Date	6/24/21	Thermo ID	A023		
Test Personnel	Ben/BG	Nozzle ID/Diams.			
Sample Time	48 min.	Avg. Nozzle Diam.	.250 in.	Total Traverse Points	16

K Factor	N/A
----------	-----

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	0.086	0.020
Pitot	13.9	6.1

Filter ID N/A
Sample ID Rev 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	3	0937	1.8	1.3	544.900	186	N/A	76	253	248	N/A	64	3	
2	6		2.0	1.3	548.7	186		75	256	246		51	3	
3	9		2.0	1.3	550.7	186		75	255	245		47	3	
4	12		2.0	1.3	552.5	186		75	252	246		48	3	
5	15		1.4	1.3	559.4	186		75	252	246		49	3	
6	18		1.2	1.3	556.398	186		76	251	247		51	3	
7	21		1.3	1.3	558.299	185		76	256	245		52	3	
8	24		1.2	1.3	560.2	185		76	254	249		53	3	
B-1	27		1.7	1.3	562.1	180		77	252	246		57	3	
2	30		1.7	1.3	564.1	186		77	249	245		55	3	
3	33		1.9	1.3	566.0	186		77	249	244		54	3	
4	36		1.8	1.3	567.9	186		77	250	243		54	3	
5	39		1.8	1.3	569.9	186		78	252	246		55	3	
6	42		1.8	1.3	571.9	185		78	254	244		54	3	
7	45		1.5	1.3	573.5	185		78	251	247		56	3	
8	48	10:29	1.4	1.3	575.444	184		78	249	246		56	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m	Min/Max	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m, std} scf
			1.2823	1.3060	30.544	185	26.5	244/249	249/256	244/249	244/249	64	3	Q _s , dscfm
			1.656	1.1402										% Isokinetic



Integrated Air Services

Comments

Flue Gas Composition	O ₂ /CO ₂ by Orsat Fyrite M3A
Oxygen, %	
Carbon Dioxide, %	
Moisture, %	
Leak Check, Pre-run	Post-run

Thermocouple Check	Q _s , dscfm
Meter Temp., °F	% Isokinetic
Ref. Temp., °F	Calculated by
Result	QC by

No. 3 Hood Exhaust

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
Location/Plant Catawba, SC
Source No. 3 Hood Exhaust
Sample Location Post
W. O. Number 15730.001.008
Run Number 2
Date 4/24/21
Test Personnel B. B. B.
Sample Time 48 min.

Console ID A23
Meter Corr., Y 1.003
Console ΔH@ 1.800
Probe ID/Length PRC-6'
Liner Material SS
Pitot ID/Coeff. P77
Thermo ID A23
Nozzle ID/Diams. 0.250 in.

Ambient Temp. 73 °F
Baro. Pressure* 29.70 in. Hg
Static Pressure -1.0 in. H₂O
Impinger Gain 163.4 mL
Silica Gel Gain 7.2 g
Stack Area 17.03 ft²
Total Traverse Points 16

K Factor N/A

Leak Checks

	Initial	Final
Volume, ft ³	0.54	1.002
@ Vac., in. Hg	12.4	5
Pitot	Good	Good

Filter ID N/A
Sample ID 2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	10:42			576.747	186	N/A	80	250	239	58NA	58	3	
2	3		1.6	1.3	578.7	188		80	251	243		57	3	
3	6		1.8	1.3	580.5	188		80	256	242		56	3	
4	9		1.9	1.3	582.4	188		81	251	243		56	3	
5	12		1.9	1.3	584.2	188		81	251	244		56	3	
6	15		1.7	1.3	586.1	188		81	251	242		57	3	
7	18		1.6	1.3	588.1	189		82	252	244		57	3	
8	21		1.6	1.3	590.0	189		82	252	242		57	3	
B-1	24		1.6	1.3	591.9	189		82	252	239		59	3	
2	27		1.8	1.3	593.9	186		82	249	241		58	3	
3	30		2.0	1.3	595.8	189		82	253	244		59	3	
4	33		2.0	1.3	597.6	189		82	252	242		60	3	
5	36		1.1	1.3	599.5	187		81	253	241		62	3	
6	39		1.2	1.3	601.3	185		83	254	241		64	3	
7	42		1.1	1.3	603.2	185		84	253	240		62	3	
8	45		1.3	1.3	605.1	184		84	253	243		59	3	
8	48	11:36	1.2	1.3	607.094	179		84	253	243		59	3	

*Barometric Pressure is at port elevation

Avg. ΔP	1.2537	Avg. ΔH	1.300	Total Volume	30.347	Avg. T _s	186.8	Avg. T _m	81.6	Min/Max	237/244	Max Temp	64	Max Vac	3	V _{m, std.}	scf
---------	--------	---------	-------	--------------	--------	---------------------	-------	---------------------	------	---------	---------	----------	----	---------	---	----------------------	-----

Flue Gas Composition	O ₂ /CO ₂ by Orsat	Fyrite M3A	Leak Check, Pre-run	Post-run	Thermocouple Check	Meter Temp., °F	% Isokinetic	Calculated by	QC by
Oxygen, %									
Carbon Dioxide, %									
Moisture, %									



Integrated Air Services

Comments

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SOTVs & #1-2 CBs
Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A023	Ambient Temp.	75 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.003	Baro. Pressure*	29.70 in. Hg
Source	No. 3 Hood Exhaust	Console ΔH@	1.800	Static Pressure	-1.0 in. H ₂ O
Sample Location	Roof	Probe ID/Length	PELC-6'	Impinger Gain	146.8 mL
W. O. Number	15730.001.008	Liner Material	SS	Silica Gel Gain	6.4 g
Run Number	3	Pitot ID/Coeff.	P77	0.84	
Date	6/24/21	Thermo ID	A023	Stack Area	17.23 ft ²
Test Personnel	BEA/BE	Nozzle ID/Diams.			
Sample Time	48 min.	Avg. Nozzle Diam.	1.250 in.	Total Traverse Points	16

K Factor	N/A
Leak Checks	
Volume, ft ³	Initial
@ Vac., in. Hg	.003
Pitot	12"
	Good

Volume, ft ³	Initial	Final
@ Vac., in. Hg	.003	.000
Pitot	12"	6"
	Good	Good

Filter ID N/A
Sample ID Rn3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	11:45			607.635	180	N/A	85	250	209	N/A	66	3	
2	3		1.6	1.3	609.9	183		85	249	242		56	2	
3	6		1.8	1.3	611.6	184		85	250	247		54	2	
4	9		1.8	1.3	613.6	183		85	244	246		53	2	
5	12		1.9	1.3	615.5	183		86	253	247		54	2	
6	15		1.8	1.3	617.4	183		86	252	244		55	2	
7	18		1.6	1.3	619.3	183		86	251	243		55	2	
8	21		1.6	1.3	621.2	182		87	251	244		54	2	
B-1	24		1.5	1.3	623.1	179		88	249	245		57	2	
2	27		1.7	1.3	625.0	183		88	252	245		54	2	
3	30		1.7	1.3	626.9	183		88	252	245		54	2	
4	33		1.9	1.3	628.8	183		88	254	245		55	2	
5	36		1.9	1.3	630.7	183		89	254	249		56	2	
6	39		1.8	1.3	632.5	182		89	250	247		57	2	
7	42		1.2	1.3	634.5	183		89	253	244		57	2	
8	45		1.2	1.3	636.4	177		90	254	244		58	2	
8	48	12:36	1.1	1.3	638.367	177		87.1	249.54	204.24		60	3	

*Barometric Pressure is at port elevation



Integrated Air Services

Avg Vap	1.2730	Avg ΔH	1.300
Avg Vap	1.631	Avg ΔH	1.1402

Flue Gas Composition	
Oxygen, %	
Carbon Dioxide, %	
Moisture, %	

O ₂ /CO ₂ by Orsat Fyrite M3A	
Leak Check, Pre-run	
Post-run	

Thermocouple Check	
Meter Temp., °F	
Ref. Temp., °F	
Result	

15730.001.008
Pulv. Dryer, #3 Paper Machine,
#23 SOTV & #1-2 CBs
Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 3 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	653.6	821.4	642.9		875.4	
Initial	726.0	784.5	637.9		869.9	
Gain	127.6 ✓	31.9 ✓	5 ✓	164.5 ✓	5.5 ✓	170.0

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Run No. 2 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	909.6	668.0	556.8		916.6	
Initial	767.3	649.7	554.0		909.4	
Gain	142.3 ✓	18.3 ✓	2.8 ✓	163.4 ✓	7.2 ✓	170.6

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Run No. 3 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	880.1	841.3	645		866.1	
Initial	754.1	822.2	643.3		859.7	
Gain	126 ✓	19.1 ✓	1.7 ✓	146.8 ✓	6.4 ✓	153.2

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Check COC for Sample IDs of Media Blanks

10

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
Paper, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client New Indy
Location/Plant Catawba, SC
Source No. 3 Hood Exhaust

Operator VD / LF
Date 15-Jun-21
W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	56.000
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	55.875
Area of Duct (ft ²)	17.03
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	6	6
3	19.4	11	11
4	32.3	18	18
5	67.7	38	38
6	80.6	45	45
7	89.5	50	50
8	96.8	54	54
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

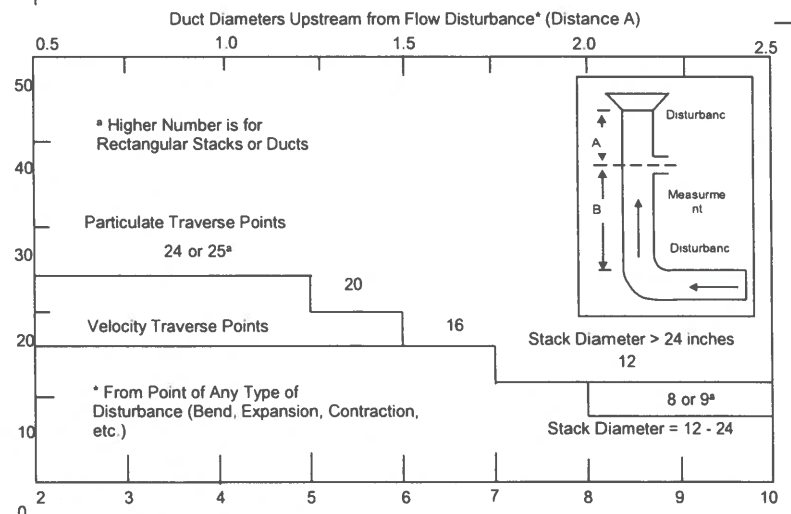
Traverse Point Location Percent of Stack - Circular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3				75		29.6		19.4		14.6		11.8
	4				93.3		70.4		32.3		22.6		17.7
	5						85.4		67.7		34.2		25
	6						95.6		80.6		65.8		35.6
	7								89.5		77.4		64.4
	8								96.8		85.4		75
	9										91.8		82.3
	10										97.4		88.2
	11												93.3
	12												97.9

Flow Disturbances

Upstream - A (ft)	7.000
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.50
Downstream - B (duct diameters)	5.37

Diagram of Stack



Duct Diameters Downstream from Flow Disturbance* (Distance B)

Traverse Point Location Percent of Stack - Rectangular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
	6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7							92.9	81.3	72.2	65.0	59.1	54.2
	8								93.8	83.3	75.0	68.2	62.5
	9									94.4	85.0	77.3	70.8
	10										95.0	86.4	79.2
	11											95.5	87.5
	12												95.8

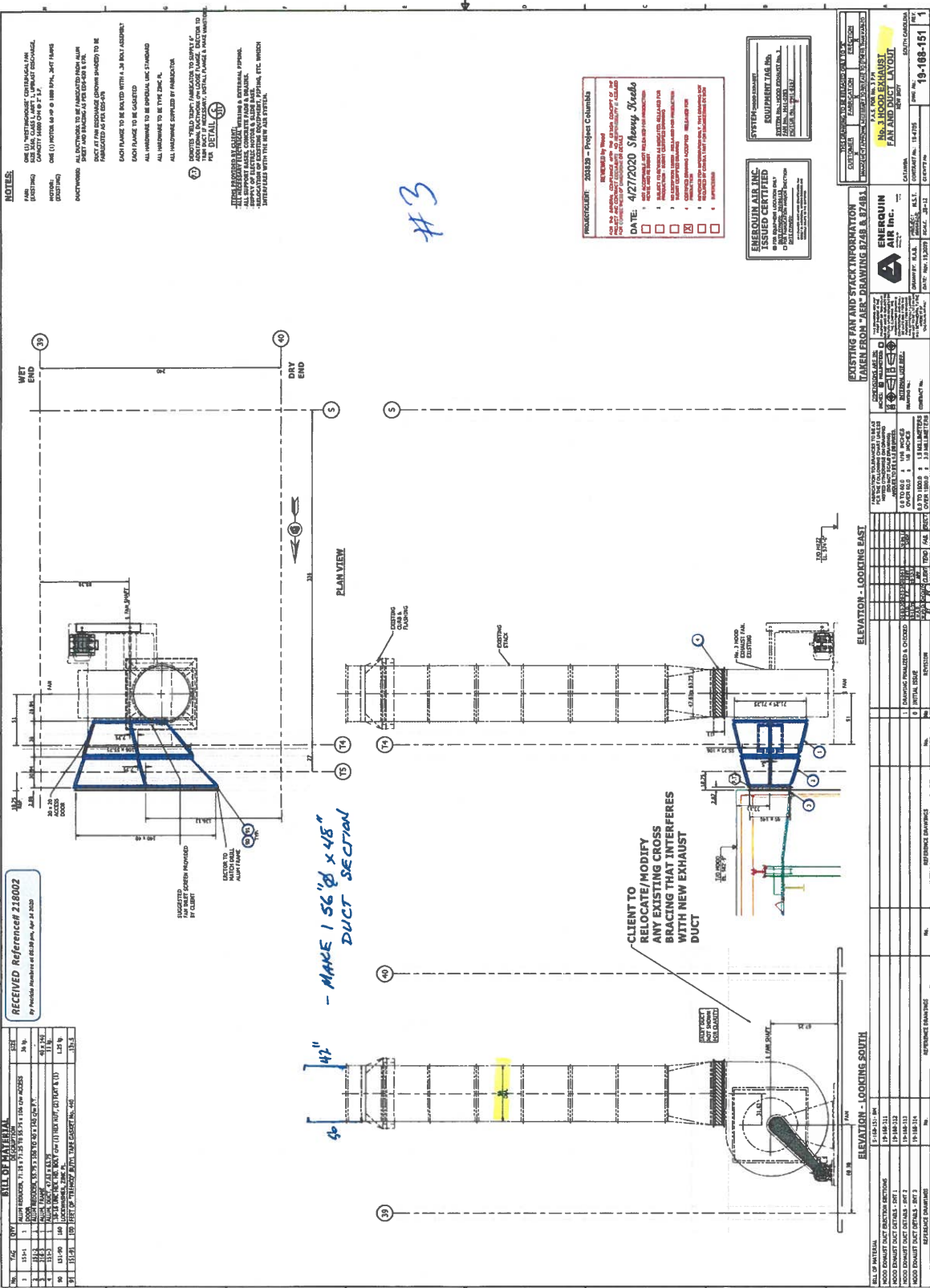
Rectangular Stack Points & Matrix

9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Port Diam. (in) = 4
Number of Ports = 2

Tape Measure I.D. # TM-07





RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 09:37 End Time 10:37

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.45~~ 0.92
~~0.79~~ ppm
97.2 %
~~0.81~~ ppm
0.95

AB
9129 ✓

AB
915 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 10:42 End Time 11:42

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.77~~ 0.82

0.67 ppm

97.2 %

~~0.69~~ ppm

~~0.76~~

0.84

AB
9/29 ✓

AB
9/15 ✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 11:45 End Time 12:45

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.71~~ 0.85

0.71 ppm

97.2 %

0.73 ppm

~~0.80~~

0.87

AB
9/29 ✓

AB
9/15 ✓

RUN DATA

Number 1

Client: New Indy
 Location: Catawba, SC
 Source: Paper Machine Vent 3
 Project Number: 15730.001.008
 Operator: VD
 Date: 24 Jun 2021
 Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMSD			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
09:37	61	0.46		<2		0.095	<2		0.091	<2		0.027	0.70
09:40	19	0.25		<2		0.095	<2		0.091	<2		0.027	0.49
09:43	47	0.40		30	0.37		<2		0.091	<2		0.027	0.92
09:46	11	0.19		<2		0.095	<2		0.091	<2		0.027	0.43
09:49	40	0.37		<2		0.095	<2		0.091	10	0.06		0.68
09:52	7	0.15		22	0.32		<2		0.091	75	0.19		0.93
09:55	23	0.28		11	0.22		17	0.27		46	0.14		1.06
09:58	113	0.64		<2		0.095	<2		0.091	47	0.15		1.12
10:01	20	0.26		<2		0.095	<2		0.091	91	0.21		0.85
10:04	<2		0.076	34	0.40		<2		0.091	38	0.13		0.83
10:07	49	0.41		18	0.29		<2		0.091	143	0.26		1.31
10:10	24	0.29		8	0.19		27	0.34		143	0.26		1.34
10:13	<2		0.076	<2		0.095	6	0.15		109	0.23		0.78
10:16	46	0.40		5	0.15		<2		0.091	<2		0.027	0.70
10:19	31	0.32		30	0.37		87	0.62		<2		0.027	1.37
10:22	133	0.70		38	0.42		<2		0.091	<2		0.027	1.26
10:25	8	0.16		33	0.39		<2		0.091	52	0.15		0.94
10:28	<2		0.076	10	0.22		13	0.23		26	0.11		0.74
10:31	<2		0.076	10	0.21		13	0.24		47	0.15		0.81
10:34	9	0.17		13	0.24		96	0.65		<2		0.027	1.12
Averages			0.29										0.92

RUN DATA

Number 2

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 3
Project Number: 15730.001.008
Operator: VD
Date: 24 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
10:42	52	0.43		25	0.34		<2		0.091	<2		0.027	0.91	0.91
10:45	44	0.39		63	0.54		<2		0.091	<2		0.027	1.08	1.08
08:38	12	0.20		<2		0.095	5	0.15		<2		0.027	0.50	0.50
10:51	21	0.26		<2		0.095	<2		0.091	<2		0.027	0.50	0.50
10:54	18	0.25		<2		0.095	<2		0.091	<2		0.027	0.49	0.49
10:57	81	0.54		15	0.26		10	0.20		<2		0.027	1.06	1.06
11:00	14	0.21		46	0.46		22	0.31		<2		0.027	1.04	1.04
11:03	<2		0.076	<2		0.095	<2		0.091	<2		0.027	0.32	0.32
11:06	13	0.20		36	0.41		33	0.38		<2		0.027	1.04	1.04
11:09	<2		0.076	<2		0.095	<2		0.091	<2		0.027	0.32	0.32
11:12	139	0.71		17	0.28		<2		0.091	<2		0.027	1.13	1.13
11:15	6	0.13		<2		0.095	38	0.41		<2		0.027	0.69	0.69
11:18	22	0.27		6	0.17		<2		0.091	<2		0.027	0.58	0.58
11:21	30	0.32		24	0.33		<2		0.091	<2		0.027	0.79	0.79
11:24	55	0.44		10	0.21		57	0.50		<2		0.027	1.20	1.20
11:27	<2		0.076	19	0.29		<2		0.091	<2		0.027	0.51	0.51
11:30	12	0.20		15	0.26		102	0.67		<2		0.027	1.19	1.19
11:33	22	0.27		7	0.18		12	0.23		<2		0.027	0.74	0.74
11:36	37	0.36		40	0.43		88	0.62		41	0.14		1.68	1.68
11:39	14	0.21		<2		0.095	8	0.18		<2		0.027	0.54	0.54
Averages			0.28										0.82	0.82

RUN DATA

Number 3

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 3
Project Number: 15730.001.008
Operator: VD
Date: 24 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
11:45	<2		0.076	7	0.18		20	0.30		16	0.08			0.71	
11:48	<2		0.076	21	0.31		20	0.30		67	0.17			1.03	
11:51	25	0.29		<2		0.095	8	0.18		<2				0.62	0.027
11:54	24	0.28		<2		0.095	<2			<2				0.52	0.027
11:57	6	0.14		10	0.22		<2			<2				0.50	0.027
12:00	128	0.68		<2		0.095	<2			<2				0.92	0.027
12:03	53	0.43		37	0.42		<2			<2				0.99	0.027
12:06	42	0.38		10	0.21		7	0.17		101	0.22			1.19	
12:09	52	0.43		20	0.30		<2			<2				0.87	0.027
12:12	77	0.52		<2		0.095	23	0.32		<2				0.99	0.027
12:15	18	0.24		14	0.26		<2			<2				0.64	0.027
12:18	12	0.20		<2		0.095	<2			<2				0.44	0.027
12:21	6	0.14		<2		0.095	<2			<2				0.38	0.027
12:24	18	0.24		<2		0.095	<2			106	0.22			0.87	
12:27	20	0.26		<2		0.095	38	0.41		47	0.15			1.05	
12:30	29	0.31		56	0.51		<2			<2				0.96	0.027
12:33	27	0.30		27	0.35		<2			<2				0.80	0.027
12:36	30	0.32		37	0.41		37	0.40		<2				1.19	0.027
12:39	59	0.45		<2		0.095	52	0.48		61	0.17			1.36	
12:42	38	0.36		35	0.40		<2			<2				0.91	0.027
Averages			0.31											0.85	

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
09:37	61	0.46	<2	<0.095	<2	<0.091	<2	<0.027	0.46
09:40	19	0.25	<2	<0.095	<2	<0.091	<2	<0.027	0.25
09:43	47	0.40	30	0.37	<2	<0.091	<2	<0.027	0.78
09:46	11	0.19	<2	<0.095	<2	<0.091	<2	<0.027	0.19
09:49	40	0.37	<2	<0.095	<2	<0.091	10	0.06	0.50
09:52	7	0.15	22	0.32	<2	<0.091	75	0.19	0.84
09:55	23	0.28	11	0.22	17	0.27	46	0.14	1.06
09:58	113	0.64	<2	<0.095	<2	<0.091	47	0.15	0.93
10:01	20	0.26	<2	<0.095	<2	<0.091	91	0.21	0.67
10:04	<2	<0.076	34	0.40	<2	<0.091	38	0.13	0.66
10:07	49	0.41	18	0.29	<2	<0.091	143	0.26	1.22
10:10	24	0.29	8	0.19	27	0.34	143	0.26	1.34
10:13	<2	<0.076	<2	<0.095	6	0.15	109	0.23	0.61
10:16	46	0.40	5	0.15	<2	<0.091	<2	<0.027	0.55
10:19	31	0.32	30	0.37	87	0.62	<2	<0.027	1.31
10:22	133	0.70	38	0.42	<2	<0.091	<2	<0.027	1.11
10:25	8	0.16	33	0.39	<2	<0.091	52	0.15	0.85
10:28	<2	<0.076	10	0.22	13	0.23	26	0.11	0.66
10:31	<2	<0.076	10	0.21	13	0.24	47	0.15	0.73
10:34	9	0.17	13	0.24	96	0.65	<2	<0.027	1.06
Average		0.27		0.19		0.13		0.10	0.79

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
10:42	52	0.43	25	0.34	<2	<0.091	<2	<0.027	0.77
10:45	44	0.39	63	0.54	<2	<0.091	<2	<0.027	0.93
10:48	12	0.20	<2	<0.095	5	0.15	<2	<0.027	0.35
10:51	21	0.26	<2	<0.095	<2	<0.091	<2	<0.027	0.26
10:54	18	0.25	<2	<0.095	<2	<0.091	<2	<0.027	0.25
10:57	81	0.54	15	0.26	10	0.20	<2	<0.027	1.00
11:00	14	0.21	46	0.46	22	0.31	<2	<0.027	0.99
11:03	<2	<0.076	<2	<0.095	<2	<0.091	<2	<0.027	-
11:06	13	0.20	36	0.41	33	0.38	<2	<0.027	0.99
11:09	<2	<0.076	<2	<0.095	<2	<0.091	<2	<0.027	-
11:12	139	0.71	17	0.28	<2	<0.091	<2	<0.027	0.99
11:15	6	0.13	<2	<0.095	38	0.41	<2	<0.027	0.54
11:18	22	0.27	6	0.17	<2	<0.091	<2	<0.027	0.44
11:21	30	0.32	24	0.33	<2	<0.091	<2	<0.027	0.65
11:24	55	0.44	10	0.21	57	0.50	<2	<0.027	1.15
11:27	<2	<0.076	19	0.29	<2	<0.091	<2	<0.027	0.29
11:30	12	0.20	15	0.26	102	0.67	<2	<0.027	1.14
11:33	22	0.27	7	0.18	12	0.23	<2	<0.027	0.69
11:36	37	0.36	40	0.43	88	0.62	41	0.14	1.68
11:39	14	0.21	<2	<0.095	8	0.18	<2	<0.027	0.39
Average		0.27		0.21		0.18		<0.027	0.67

RUN DATA

Number 3

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
11:45	<2	<0.076	7	0.18	20	0.30	16	0.08	0.64
11:48	<2	<0.076	21	0.31	20	0.30	67	0.17	0.96
11:51	25	0.29	<2	<0.095	8	0.18	<2	<0.027	0.47
11:54	24	0.28	<2	<0.095	<2	<0.091	<2	<0.027	0.28
11:57	6	0.14	10	0.22	<2	<0.091	<2	<0.027	0.36
12:00	128	0.68	<2	<0.095	<2	<0.091	<2	<0.027	0.68
12:03	53	0.43	37	0.42	<2	<0.091	<2	<0.027	0.85
12:06	42	0.38	10	0.21	7	0.17	101	0.22	1.19
12:09	52	0.43	20	0.30	<2	<0.091	<2	<0.027	0.73
12:12	77	0.52	<2	<0.095	23	0.32	<2	<0.027	0.84
12:15	18	0.24	14	0.26	<2	<0.091	<2	<0.027	0.50
12:18	12	0.20	<2	<0.095	<2	<0.091	<2	<0.027	0.20
12:21	6	0.14	<2	<0.095	<2	<0.091	<2	<0.027	0.14
12:24	18	0.24	<2	<0.095	<2	<0.091	106	0.22	0.69
12:27	20	0.26	<2	<0.095	38	0.41	47	0.15	0.96
12:30	29	0.31	56	0.51	<2	<0.091	<2	<0.027	0.82
12:33	27	0.30	27	0.35	<2	<0.091	<2	<0.027	0.66
12:36	30	0.32	37	0.41	37	0.40	<2	<0.027	1.13
12:39	59	0.45	<2	<0.095	52	0.48	61	0.17	1.27
12:42	38	0.36	35	0.40	<2	<0.091	<2	<0.027	0.77
Average		0.30		0.18		0.13		0.05	0.71

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Before Run 1

Start Time 07:42 End Time 07:59

Recovery Gas to Probe, Time 07:42

Peak Areas, mv-sec			Average	ppm
12673	11981	12277	12311	7.54

Recovery Gas to GC, Time 07:54

Peak Areas, mv-sec			Average	ppm
13351	13392	13952	13565	7.94

Recovery 95.0%

✓ WJH

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

After Run 3 Before Run 4
Start Time 12:45 End Time 12:55

Recovery Gas to Probe, Time 12:45

Peak Areas, mv-sec			Average	ppm
12908	13446	13416	13257	7.84

Recovery Gas to GC, Time 12:51

Peak Areas, mv-sec			Average	ppm
13746	14196	14064	14002	8.07

Recovery 97.2%

1/2018

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Analyte		Ambient Temperature: 72°C			Barometric Pressure: 29.60 in. Hg		
		H ₂ S	MeSH	DMS	DMS	DMS	DMS
Perm. Device ID		T-51831	33-50536	89-50725	89-53405		
Perm. Rate, nL/min		461	458	299	233		
Ret. Time, sec		25.0	35.0	63.0	132.0		
<hr/>							
1 Flow = 42.9 mL/Min		10.8 ppm	10.7 ppm	6.97 ppm	5.43 ppm		
Time: 06:01		Peak Areas, mv-sec					
		23635	22744	10268	43754		
		23397	21865	10275	43943		
		23478	22059	10303	44074		
Average Area		23503	22223	10282	43924		
<hr/>							
2 Flow = 80.0 mL/Min		5.77 ppm	5.73 ppm	3.73 ppm	2.91 ppm		
Time: 07:13		Peak Areas, mv-sec					
		8086	7277	3039	14674		
		7612	6821	2896	13428		
		7977	6961	2956	14718		
Average Area		7892	7020	2964	14273		
<hr/>							
3 Flow = 133 mL/Min		3.46 ppm	3.44 ppm	2.24 ppm	1.74 ppm		
Time: 07:30		Peak Areas, mv-sec					
		2749	2295	1139	5166		
		2668	2461	1022	4984		
		2689	2285	1136	5151		
Average Area		2702	2347	1099	5100		

WVH

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

H₂S	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	10.8	5.77	3.46		
Area, mv-sec	23503	7892	2702		
Calc. Conc., ppm	10.6	5.97	3.40		
% Error	-1.5	3.5	-1.9 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9001	2.4228	0.9986	2	0.076

MeSH	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	10.7	5.73	3.44		
Area, mv-sec	22223	7020	2347		
Calc. Conc., ppm	10.6	5.89	3.38		
% Error	-1.3	2.9	-1.5 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9758	2.3243	0.9991	2	0.095

DMS	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	6.97	3.73	2.24		
Area, mv-sec	10282	2964	1099		
Calc. Conc., ppm	6.98	3.72	2.25		
% Error	0.2	-0.5	0.3 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9707	2.3484	>0.9999	2	0.091

DMDS	1	2	3		
Time	06:01	07:13	07:30		
Concentration, ppm	5.43	2.91	1.74		
Area, mv-sec	43924	14273	5100		
Calc. Conc., ppm	5.38	2.97	1.72		
% Error	-0.9	2.1	-1.2 ✓		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8936	3.2593	0.9995	2	0.027

✓ JKH

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.60 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0
<hr/>				
1 Flow = 44.4 mL/Min	10.4 ppm	10.3 ppm	6.72 ppm	5.23 ppm
Time: 16:34	Peak Areas, mv-sec			
	23321	20338	9959	43670
	24380	21799	10647	46630
	25056	22227	10285	45442
Average Area	24252	21454	10297	45247
<hr/>				
2 Flow = 77.4 mL/Min	5.96 ppm	5.92 ppm	3.86 ppm	3.01 ppm
Time: 16:51	Peak Areas, mv-sec			
	9796	7866	3569	17108
	9812	7920	3556	17604
	9831	7352	3254	15792
Average Area	9813	7713	3460	16834
<hr/>				
3 Flow = 130 mL/Min	3.56 ppm	3.53 ppm	2.30 ppm	1.79 ppm
Time: 17:05	Peak Areas, mv-sec			
	3510	2899	1228	5869
	3467	2681	1272	6176
	3570	2800	1253	6307
Average Area	3516	2793	1251	6117

WCH

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Method **16**

H₂S	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	10.4	5.96	3.56			
Area, mv-sec	24252	9813	3516			
Calc. Conc., ppm	10.2	6.18	3.49			
% Error	-1.7	3.6	-1.8	✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8007	2.5680	0.9984	2	0.055	
MeSH	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	10.3	5.92	3.53			
Area, mv-sec	21454	7713	2793			
Calc. Conc., ppm	10.3	5.99	3.51			
% Error	-0.6	1.2	-0.6	✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9025	2.4083	0.9998	2	0.078	
DMS	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	6.72	3.86	2.30			
Area, mv-sec	10297	3460	1251			
Calc. Conc., ppm	6.72	3.86	2.30			
% Error	-0.0	0.1	-0.0	✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9679	2.3846	>0.9999	2	0.087	
DMDS	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	5.23	3.01	1.79			
Area, mv-sec	45247	16834	6117			
Calc. Conc., ppm	5.19	3.06	1.78	✓		
% Error	-0.8	1.7	-0.9	✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8669	3.3201	0.9996	2	0.024	

✓ JH

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 ✓	901 ✓	758 ✓	895 ✓
Permeation Rate, nL/min*	461	458	299	233

Barometric Pressure: 29.60 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.60) \\ = 461 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

File: E:\6-24-21.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases			Temperatures, °C	Columns
Press.	Flow			
psi	mL/min			
H ₂	30	50	Column: 100	Primary: 3'
Air	30	60	Detector: 120	Secondary:
Carrier	50	30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.60 in. Hg

RUN DATA

Number 7

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 3**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
Post test drift									
17:22	13670	7.97	<2	<0.095	<2	<0.091	<2	<0.027	7.97
17:23	13643	7.96	<2	<0.095	<2	<0.091	<2	<0.027	7.96
17:25	13246	7.84	<2	<0.095	<2	<0.091	<2	<0.027	7.84
Average		7.92	<0.095		<0.091		<0.027		7.92

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2³**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**


Time	O ₂		CO ₂	
	mv	%	mv	%

PM vent 3 Run 1

11:07:35	6776	20.2	-35	0.2
11:07:50	6778	20.2	-35	0.2
11:08:05	6777	20.2	-35	0.2
11:08:20	6778	20.2	-36	0.2
11:08:35	6776	20.2	-35	0.2
11:08:50	6777	20.2	-34	0.2
11:09:05	6779	20.2	-35	0.2
11:09:20	6778	20.2	-34	0.2
11:09:35	6778	20.2	-33	0.2
11:09:50	6779	20.2	-33	0.2
11:10:05	6776	20.2	-33	0.2
11:10:20	6780	20.2	-33	0.2
11:10:35	6776	20.2	-33	0.2
11:10:50	6777	20.2	-32	0.2
11:11:05	6780	20.2	-32	0.2
11:11:20	6776	20.2	-33	0.2
Avg	6778	20.2	-34	0.2

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent** 

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **24 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM 3 Run 2				
11:48:17	6776	20.2	-35	0.2
11:48:32	6776	20.2	-35	0.2
11:48:47	6775	20.2	-35	0.2
11:49:02	6779	20.2	-35	0.2
11:49:17	6778	20.2	-35	0.2
11:49:32	6776	20.2	-34	0.2
11:49:47	6778	20.2	-35	0.2
11:50:02	6779	20.2	-35	0.2
11:50:17	6777	20.2	-35	0.2
11:50:32	6777	20.2	-36	0.2
11:50:47	6777	20.2	-34	0.2
11:51:02	6777	20.2	-35	0.2
11:51:17	6777	20.2	-35	0.2
11:51:32	6778	20.2	-34	0.2
11:51:47	6778	20.2	-35	0.2
11:52:02	6779	20.2	-35	0.2
11:52:17	6776	20.2	-35	0.2
11:52:32	6778	20.2	-36	0.2
11:52:47	6777	20.2	-34	0.2
11:53:02	6777	20.2	-35	0.2
11:53:17	6779	20.2	-35	0.2
11:53:32	6778	20.2	-35	0.2
11:53:47	6776	20.2	-34	0.2
Avgs	6777	20.2	-35	0.2

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2 3**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **24 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM 3 Run 3				
13:11:54	6772	20.2	-32	0.2
13:12:09	6774	20.2	-31	0.2
13:12:24	6774	20.2	-32	0.2
13:12:39	6774	20.2	-33	0.2
13:12:54	6775	20.2	-34	0.2
13:13:09	6774	20.2	-31	0.2
13:13:24	6774	20.2	-32	0.2
13:13:39	6774	20.2	-34	0.2
13:13:54	6772	20.2	-33	0.2
13:14:09	6773	20.2	-33	0.2
13:14:24	6774	20.2	-33	0.2
13:14:39	6773	20.2	-33	0.2
13:14:54	6773	20.2	-33	0.2
13:15:09	6774	20.2	-33	0.2
13:15:24	6773	20.2	-34	0.2
13:15:39	6775	20.2	-34	0.2
13:15:54	6773	20.2	-35	0.2
13:16:09	6774	20.2	-35	0.2
13:16:24	6774	20.2	-35	0.2
13:16:39	6774	20.2	-34	0.2
13:16:54	6773	20.2	-35	0.2
Avgs	6774	20.2	-33	0.2

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2** 3

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 10:02

O₂

Method: EPA 3A
Calibration Type: Linear Regression

Calibration Results		
%	Cylinder ID	Result, mv
Zero	-	13
10.1 ✓	SG9168283BAL	3292
19.5 ✓	CC454190	6577

Curve Coefficients		
Slope	Intercept	Corr. Coeff.
336.5 ✓	-26 ✓	0.9998 ✓

CO₂

Method: EPA 3A
Calibration Type: Linear Regression

Calibration Results		
%	Cylinder ID	Result, mv
Zero	-	-68
10.2 ✓	SG9168283BAL	3027
20.4 ✓	CC454190	6279

Curve Coefficients		
Slope	Intercept	Corr. Coeff.
311.1 ✓	-90 ✓	0.9999 ✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **24 Jun 2021**

Start Time: 10:02

O₂

Method: EPA 3A

Span Conc. 19.5 %

Slope 336.5 Intercept -25.8

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	13	0.1	0.1	0.5	Pass
10.1	3292	9.9	-0.2	-1.0	Pass
19.5	6577	19.6	0.1	0.5	Pass

CO₂

Method: EPA 3A

Span Conc. 20.4 %

Slope 311.1 Intercept -90.1

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-68	0.1	0.1	0.5	Pass
10.2	3027	10.0	-0.2	-1.0	Pass
20.4	6279	20.5	0.1	0.5	Pass

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 2** ³

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

File: K:\15730 New Indy\001 Catawba SC\008\Data\CEMS data\6-24-21.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 4

New Indy
Catawba, SC

15730.001.008
No. 4 Hood Exhaust
Paper Machine Vent 4

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21 ✓	6/25/21 ✓	6/25/21 ✓	---
Time Began	1135 ✓	1240 ✓	1345 ✓	---
Time Ended	1235 ✓	1340 ✓	1445 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	3.32E+04 ✓	3.47E+04 ✓	3.31E+04 ✓	3.37E+04
BWS	0.269 ✓	0.268 ✓	0.263 ✓	0.267
% Oxygen	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Recovery, %	98.5 ✓	98.5 ✓	98.5 ✓	98.5
<hr/>				
Total Reduced Sulfur				
(TRS MW)=	34.08			
Concentration, ppm	0.69 ✓	0.66 ✓	0.73 ✓	0.69
Emission Rate, lb/hr	0.12	0.12	0.13	0.12
<hr/>				
H2S				
(H2S MW)=	34.08			
Concentration, ppm	0.23 ✓	0.20 ✓	0.31 ✓	0.25
Concentration, ppm (Corrected for Recovery)	0.23	0.20	0.31	0.25
Emission Rate, lb/hr	0.04	0.04	0.06	0.04

pm ✓

New Indy
Catawba, SC

15730.001.008
No. 4 Hood Exhaust

Paper Machine Vent 4

ISOKINETIC CALCULATIONS

Run Number		1	2	3	Mean
Date		6/25/21 ✓	6/25/21 ✓	6/25/21 ✓	---
Time Began		1135 ✓	1240 ✓	1345 ✓	---
Time Ended		1227 ✓	1334 ✓	1437 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	48.0 ✓	48 ✓	48 ✓	48
Stack Diameter, in.	(Dia.)	56.13 ✓	56.13 ✓	56.13 ✓	56.13
Barometric Pressure, in. Hg	(Pb)	29.68 ✓	29.68 ✓	29.68 ✓	29.68
Static Pressure, in. H2O	(Pg)	-0.49 ✓	-0.49 ✓	-0.49 ✓	-0.49
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.0030 ✓	1.0030 ✓	1.0030 ✓	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 ✓	1.8000 ✓	1.8000 ✓	1.8000
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	29.932 ✓	30.405 ✓	30.432 ✓	30.256
Meter Temperature, °F	(Tm)	84.1 ✓	86.3 ✓	85.2 ✓	85.2
Meter Temperature, °R	(Tm-R)	544.1	546.3	545.2	545.2
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2})avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	226.5 ✓	228.6 ✓	223.0 ✓	226.0
CO2 Concentration, %	(CO2)	0.2 ✓	0.2 ✓	0.2 ✓	0.2
O2 Concentration, %	(O2)	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2})avg)	0.831 ✓	0.869 ✓	0.824 ✓	0.841
Stack Temperature, °F	(Ts)	193.1 ✓	193.6 ✓	194.1 ✓	193.6
Stack Temperature, °R	(Ts-R)	653.1	653.6	654.1	653.6
Moisture Fraction (at Saturation)	(BWS)	0.685 ✓	0.693 ✓	0.700 ✓	0.693
CALCULATED DATA					
Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	17.18 ✓	17.18 ✓	17.18 ✓	17.18
Stack Pressure, in. Hg	(Ps)	29.64	29.64	29.64	29.64
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft ³	(Vmstd)	28.981	29.321	29.406	29.236
Standard Water Volume, ft ³	(Vwstd)	10.661	10.760	10.497	10.639
Moisture Fraction (Measured)	(BWS)	0.269	0.268	0.263	0.267
Moisture Fraction (lower sat/meas)	(BWS)	0.269	0.268	0.263	0.267
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	25.92	25.93	25.99	25.95
Average Stack Gas Velocity, ft/sec	(Vs)	54.99	57.54	54.52	55.68
Stack Gas Flow, actual, ft ³ /min	(Qa)	56682	59312	56198	57397
Stack Gas Flow, Std, ft ³ /min	(Qs)	33178	34714	33109	33667
Calibration check	(Yqa)	1.0434	1.0293	1.0273	1.033
Percent difference from Y					3.02%

Isokinetic Field Data

Method: EPA 4, Moisture

Bare Pressure 29.68

Client New Indy
 Location/Plant Catawba, SC
 Source No. 4 Hood Exhaust
 Sample Location Room 8
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/25/21
 Test Personnel BGA/BZ
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR6C-6'
 Liner Material SS
 Pitot ID/Coeff. P77 0.84
 Thermo ID A023
 Nozzle ID/Diams.
 Avg. Nozzle Diam. .250 in.

K Factor N/A
 Leak Checks

Volume, ft³	Initial	Final
@ Vac., in. Hg	0.000	0.000
Pitot	12"	6"
	Good	Good

Filter ID N/A
 Sample ID Run 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H₂O)	ORIFICE PRESSURE ΔH (in. H₂O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DCGM INLET TEMP (°F)	DCGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE --TRAIN VACUUM (in Hg)	COMMENTS
	0	11:35			821.800									
A-1	3		.78	1.3	823.6	193	N/A	82	243	251	N/A	63	3	
2	6		.73	1.3	825.4	193		82	243	252		63	3	
3	9		.72	1.3	827.2	193		83	242	265		54	3	
4	12		.54	1.3	829.1	193		84	243	253		50	3	
5	15		.68	1.3	831.0	193		84	241	250		50	3	
6	18		.70	1.3	832.9	193		83	240	250		50	3	
7	21		.67	1.3	834.8	193		84	241	251		50	3	
8	24		.60	1.3	836.7	191		85	242	254		50	3	
B-1	27		.77	1.3	838.6	193		84	241	255		56	3	
2	30		.79	1.3	840.4	193		86	241	254		51	3	
3	33		.70	1.3	842.3	193		85	243	251		49	3	
4	36		.68	1.3	844.2	193		85	242	255		49	3	
5	39		.69	1.3	846.1	195		85	242	251		49	3	
6	42		.70	1.3	848.0	195		85	243	254		50	3	
7	45		.66	1.3	849.8	193		85	241	253		50	3	
8	48	12:27	.65	1.3	851.732	193		85	242	251		51	3	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _m	O ₂ /CO ₂ by Orsat		Min/Max	Min/Max	Max Temp	Max Vac	V _{m-ad} , scf
			1.806	1.300	29.932	193.1	84.1	246/243		250/255		63	3	



Integrated Air Services

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 0.2
 Moisture, %

Leak Check, Pre-run
 Post-run
 Result

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F

Comments

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 4 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/25/21
 Test Personnel BEA/BCE
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR6C-6'
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A023
 Nozzle ID/Diams. 0.250 in.

Ambient Temp. 79 °F
 Baro. Pressure 29.68 in. Hg
 Static Pressure -0.49 in. H₂O
 Impinger Gain 220.9 mL
 Silica Gel Gain 7.7 g
 Stack Area 17.18 ft²
 Total Traverse Points 16

K Factor N/A

Leak Checks

	Initial	Final
Volume, ft ³	<u>0.900</u>	<u>0.000</u>
@ Vac., in. Hg	<u>12"</u>	<u>5"</u>
Pitot	<u>Good</u>	<u>Good</u>

Filter ID N/A
 Sample ID R012

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
	0	12:40			857.900									
A-1	3		.84	1.3	853.9	192	N/A	86	243	256	N/A	65	2	
2	6		.84	1.3	855.8	193		86	242	255		64	2	
3	9		.85	1.3	857.7	194		87	241	255		61	2	
4	12		.74	1.3	859.5	194		86	242	257		61	2	
5	15		.76	1.3	861.4	194		85	241	251		61	2	
6	18		.74	1.3	863.3	194		86	242	255		61	2	
7	21		.73	1.3	865.2	194		86	242	256		63	2	
8	24		.66	1.3	867.1	193		87	242	252		65	2	
B-1	27		.81	1.3	869.0	194		87	243	254		64	2	
2	30		.84	1.3	870.9	194		87	239	257		62	2	
3	33		.79	1.3	872.7	194		87	242	258		61	2	
4	36		.67	1.3	874.7	194		86	241	256		61	2	
5	39		.71	1.3	876.6	194		86	243	248		61	2	
6	42		.73	1.3	878.5	194		86	241	251		62	2	
7	45		.72	1.3	880.4	193		86	242	251		63	2	
8	48	13:34	.67	1.3	882.305	193		87	242	254		64	2	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-std} , scf
			.8689	1.300	36.405	192.6	86.3		231/243	248/258		65	2	

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 0.2
 Moisture, %

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

Leak Check, Pre-run
 Post-run

QC by md



Integrated Air Services

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A023	Ambient Temp.	79 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.003	Baro. Pressure*	29.68 in. Hg
Source	No. 4 Hood Exhaust	Console ΔH@	1.800	Static Pressure	-2.49 in. H ₂ O
Sample Location	Roof	Probe ID/Length	PR6C-6'	Impinger Gain	217.3 mL
W. O. Number	15730.001.008	Liner Material	SS	Silica Gel Gain	5.7 g
Run Number	3	Pitot ID/Coeff.	P77 0.84		
Date	6/25/21	Thermo ID	A023	Stack Area	17.18 ft ²
Test Personnel	BZA / BE	Nozzle ID/Diams.			
Sample Time	48 min.	Avg. Nozzle Diam.	.250 in.	Total Traverse Points	16

K Factor	N/A
----------	-----


Leak Checks

	Initial	Final
Volume, ft ³	0.004	0.001
@ Vac., in. Hg	12"	5"
Pitot	Good	Good

Filter ID N/A

Sample ID Run 3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	13:45			882.557	195	N/A	86	243	256	N/A	63	3	
2	3		.81	1.3	884.5	195		86	239	255		62	3	
3	6		.80	1.3	886.4	195		85	241	254		57	3	
4	9		.76	1.3	888.2	194		85	240	254		55	3	
5	12		.54	1.3	890.1	194		85	242	252		55	3	
6	15		.50	1.3	892.0	194		84	239	253		54	3	
7	18		.71	1.3	893.9	194		84	240	253		54	3	
8	21		.67	1.3	895.8	194		84	240	251		54	3	
B-1	24		.67	1.3	897.7	194		85	242	252		57	3	
2	27		.80	1.3	899.6	194		86	243	253		55	3	
3	30		.76	1.3	901.6	194		86	241	252		55	3	
4	33		.70	1.3	903.5	194		86	240	252		56	3	
5	36		.68	1.3	905.4	194		86	243	252		57	3	
6	39		.63	1.3	907.2	194		85	240	252		58	3	
7	42		.58	1.3	909.1	194		85	240	252		59	3	
8	45		.65	1.3	911.0	193		85	240	254		59	3	
8	48	14:37	.65	1.3	912.899	193		85	240	254		59	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Avg T _g	Avg T _m	Avg T _{in}							
			82.39	1.300	194.1	85.2								

	Comments	Integrated Air Services	
	Flue Gas Composition	O ₂ /CO ₂ by Orsat	Fyrite M3A
	Oxygen, %	20.2	Leak Check, Pre-run
	Carbon Dioxide, %	0.2	Post-run
	Moisture, %		
	Thermocouple Check	Q _s , dscfm	
	Meter Temp., °F	% Isokinetic	
	Ref. Temp., °F	Calculated by	
	Result	QC by	

Sample travel 48
DGM reading: 912.989

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 4 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No.	<u>1</u>			Sample Date	<u>6/25/21</u>	Recovery Date	<u>6/25/21</u>
Sample ID	<u>Run 1</u>			Filter ID	<u>N/A</u>	Analyst	<u>BA</u>
	Impingers						
	1	2	3		Imp.Total	Silica Gel	Total
Contents						grams	
Final	<u>954.7</u>	<u>723.6</u>	<u>555.9</u>			<u>896.5</u>	
Initial	<u>766.9</u>	<u>690.8</u>	<u>557.6</u>			<u>888.9</u>	
Gain	<u>187.8</u> ✓	<u>32.8</u> ✓	<u>-1.7</u> ✓		<u>218.9</u>	<u>7.6</u> ✓	<u>226.5</u>
Impinger Color	<u>clear</u>			Labeled?	✓		
Silica Gel Condition	<u>good</u>			Sealed?	✓		

Run No.	<u>2</u>			Sample Date	<u>6/25/21</u>	Recovery Date	<u>6/25/21</u>
Sample ID	<u>Run 2</u>			Filter ID	<u>N/A</u>	Analyst	<u>BA</u>
	Impingers						
	1	2	3		Imp.Total	Silica Gel	Total
Contents						grams	
Final	<u>940.9</u>	<u>839.8</u>	<u>658.5</u>			<u>859.8</u>	
Initial	<u>763.2</u>	<u>802.2</u>	<u>652.9</u>			<u>852.1</u>	
Gain	<u>177.7</u> ✓	<u>37.6</u> ✓	<u>5.6</u> ✓		<u>220.9</u>	<u>7.7</u> ✓	<u>228.6</u>
Impinger Color	<u>clear</u>			Labeled?	✓		
Silica Gel Condition	<u>good</u>			Sealed?	✓		

Run No.	<u>3</u>			Sample Date	<u>6/25/21</u>	Recovery Date	<u>6/25/21</u>
Sample ID	<u>Run 3</u>			Filter ID	<u>N/A</u>	Analyst	<u>BA</u>
	Impingers						
	1	2	3		Imp.Total	Silica Gel	Total
Contents						grams	
Final	<u>949.0</u>	<u>718.9</u>	<u>553.8</u>			<u>901.0</u>	
Initial	<u>762.9</u>	<u>684.6</u>	<u>556.9</u>			<u>895.3</u>	
Gain	<u>186.1</u> ✓	<u>34.3</u> ✓	<u>-3.1</u> ✓		<u>217.3</u>	<u>5.7</u> ✓	<u>223</u>
Impinger Color	<u>clear</u>			Labeled?	✓		
Silica Gel Condition	<u>good</u>			Sealed?	✓		

Check COC for Sample IDs of Media Blanks

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
Philip Meyer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client New Indy
Location/Plant Catawba, SC
Source No. 4 Hood Exhaust

Operator VD / LF
Date 15-Jun-21
W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	56.250
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	56.125
Area of Duct (ft ²)	17.18
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)

Total Ports (rectangular duct only)

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	6	6
3	19.4	11	11
4	32.3	18	18 1/2
5	67.7	38	38
6	80.6	45	45 1/2
7	89.5	50	50 1/2
8	96.8	54 1/2	54 1/2
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 \cdot L \cdot W) / (L + W)$$

Traverse Point Location Percent of Stack -Circular

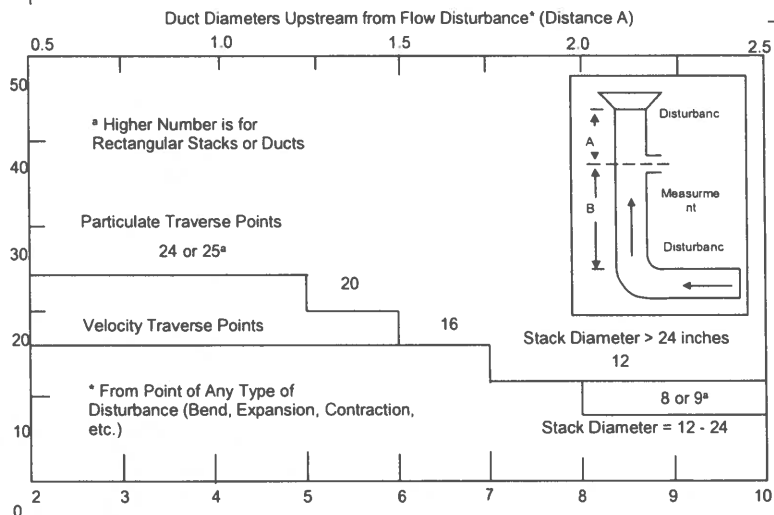
Number of Traverse Points

	1	2	3	4	5	6	7	8	9	10	11	12
T	1	14.6		6.7		4.4		3.2		2.6		2.1
r	2	85.4		25		14.6		10.5		8.2		6.7
a	3			75		29.6		19.4		14.6		11.8
v	4					93.3		70.4		32.3		17.7
L	5							85.4		67.7		25
e	6							95.6		80.6		35.6
r	7									89.5		64.4
c	8									96.8		75
s	9											91.8
s	10											97.4
a	11											93.3
e	12											97.9

Flow Disturbances

Upstream - A (ft)	5.670
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.21
Downstream - B (duct diameters)	5.35

Diagram of Stack



Traverse Point Location Percent of Stack -Rectangular

Number of Traverse Points

	1	2	3	4	5	6	7	8	9	10	11	12
T	1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
r	2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
a	3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
v	4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
L	5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
e	6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
r	7						92.9	81.3	72.2	65.0	59.1	54.2
c	8							93.8	83.3	75.0	68.2	62.5
s	9								94.4	85.0	77.3	70.8
a	10									95.0	86.4	79.2
e	11										95.5	87.5
t	12											95.8

Rectangular Stack Points & Matrix

9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Port Diam. (in) = 4
Number of Ports = 2

Tape Measure I.D. # TM-07

ELEVATION - LOOKING SOUTH		ELEVATION - LOOKING EAST	
1	REL OF MATERIAL	2	1
2	HOOD EXHAUST DUCT SECTION DETAILS	3	2
3	HOOD EXHAUST DUCT DETAILS - INT 1	4	3
4	HOOD EXHAUST DUCT DETAILS - INT 2	5	4
5	HOOD EXHAUST DUCT DETAILS - INT 3	6	5
6	HOOD EXHAUST DUCT DETAILS - INT 4	7	6
7	HOOD EXHAUST DUCT DETAILS - INT 5	8	7
8	HOOD EXHAUST DUCT DETAILS - INT 6	9	8
9	HOOD EXHAUST DUCT DETAILS - INT 7	10	9
10	HOOD EXHAUST DUCT DETAILS - INT 8	11	10
11	HOOD EXHAUST DUCT DETAILS - INT 9	12	11
12	HOOD EXHAUST DUCT DETAILS - INT 10	13	12
13	HOOD EXHAUST DUCT DETAILS - INT 11	14	13
14	HOOD EXHAUST DUCT DETAILS - INT 12	15	14
15	HOOD EXHAUST DUCT DETAILS - INT 13	16	15
16	HOOD EXHAUST DUCT DETAILS - INT 14	17	16
17	HOOD EXHAUST DUCT DETAILS - INT 15	18	17
18	HOOD EXHAUST DUCT DETAILS - INT 16	19	18
19	HOOD EXHAUST DUCT DETAILS - INT 17	20	19
20	HOOD EXHAUST DUCT DETAILS - INT 18	21	20
21	HOOD EXHAUST DUCT DETAILS - INT 19	22	21
22	HOOD EXHAUST DUCT DETAILS - INT 20	23	22
23	HOOD EXHAUST DUCT DETAILS - INT 21	24	23
24	HOOD EXHAUST DUCT DETAILS - INT 22	25	24
25	HOOD EXHAUST DUCT DETAILS - INT 23	26	25
26	HOOD EXHAUST DUCT DETAILS - INT 24	27	26
27	HOOD EXHAUST DUCT DETAILS - INT 25	28	27
28	HOOD EXHAUST DUCT DETAILS - INT 26	29	28
29	HOOD EXHAUST DUCT DETAILS - INT 27	30	29
30	HOOD EXHAUST DUCT DETAILS - INT 28	31	30
31	HOOD EXHAUST DUCT DETAILS - INT 29	32	31
32	HOOD EXHAUST DUCT DETAILS - INT 30	33	32
33	HOOD EXHAUST DUCT DETAILS - INT 31	34	33
34	HOOD EXHAUST DUCT DETAILS - INT 32	35	34
35	HOOD EXHAUST DUCT DETAILS - INT 33	36	35
36	HOOD EXHAUST DUCT DETAILS - INT 34	37	36
37	HOOD EXHAUST DUCT DETAILS - INT 35	38	37
38	HOOD EXHAUST DUCT DETAILS - INT 36	39	38
39	HOOD EXHAUST DUCT DETAILS - INT 37	40	39
40	HOOD EXHAUST DUCT DETAILS - INT 38	41	40
41	HOOD EXHAUST DUCT DETAILS - INT 39	42	41
42	HOOD EXHAUST DUCT DETAILS - INT 40	43	42
43	HOOD EXHAUST DUCT DETAILS - INT 41	44	43
44	HOOD EXHAUST DUCT DETAILS - INT 42	45	44
45	HOOD EXHAUST DUCT DETAILS - INT 43	46	45
46	HOOD EXHAUST DUCT DETAILS - INT 44	47	46
47	HOOD EXHAUST DUCT DETAILS - INT 45	48	47
48	HOOD EXHAUST DUCT DETAILS - INT 46	49	48
49	HOOD EXHAUST DUCT DETAILS - INT 47	50	49
50	HOOD EXHAUST DUCT DETAILS - INT 48	51	50
51	HOOD EXHAUST DUCT DETAILS - INT 49	52	51
52	HOOD EXHAUST DUCT DETAILS - INT 50	53	52
53	HOOD EXHAUST DUCT DETAILS - INT 51	54	53
54	HOOD EXHAUST DUCT DETAILS - INT 52	55	54
55	HOOD EXHAUST DUCT DETAILS - INT 53	56	55
56	HOOD EXHAUST DUCT DETAILS - INT 54	57	56
57	HOOD EXHAUST DUCT DETAILS - INT 55	58	57
58	HOOD EXHAUST DUCT DETAILS - INT 56	59	58
59	HOOD EXHAUST DUCT DETAILS - INT 57	60	59
60	HOOD EXHAUST DUCT DETAILS - INT 58	61	60
61	HOOD EXHAUST DUCT DETAILS - INT 59	62	61
62	HOOD EXHAUST DUCT DETAILS - INT 60	63	62
63	HOOD EXHAUST DUCT DETAILS - INT 61	64	63
64	HOOD EXHAUST DUCT DETAILS - INT 62	65	64
65	HOOD EXHAUST DUCT DETAILS - INT 63	66	65
66	HOOD EXHAUST DUCT DETAILS - INT 64	67	66
67	HOOD EXHAUST DUCT DETAILS - INT 65	68	67
68	HOOD EXHAUST DUCT DETAILS - INT 66	69	68
69	HOOD EXHAUST DUCT DETAILS - INT 67	70	69
70	HOOD EXHAUST DUCT DETAILS - INT 68	71	70
71	HOOD EXHAUST DUCT DETAILS - INT 69	72	71
72	HOOD EXHAUST DUCT DETAILS - INT 70	73	72
73	HOOD EXHAUST DUCT DETAILS - INT 71	74	73
74	HOOD EXHAUST DUCT DETAILS - INT 72	75	74
75	HOOD EXHAUST DUCT DETAILS - INT 73	76	75
76	HOOD EXHAUST DUCT DETAILS - INT 74	77	76
77	HOOD EXHAUST DUCT DETAILS - INT 75	78	77
78	HOOD EXHAUST DUCT DETAILS - INT 76	79	78
79	HOOD EXHAUST DUCT DETAILS - INT 77	80	79
80	HOOD EXHAUST DUCT DETAILS - INT 78	81	80
81	HOOD EXHAUST DUCT DETAILS - INT 79	82	81
82	HOOD EXHAUST DUCT DETAILS - INT 80	83	

RUN SUMMARY

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1** *4*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 11:35 End Time 12:35

Average Measured TRS Conc.
Recovery No. 3
TRS Corrected for Recovery

0.62 0.68
~~0.58~~ ppm
98.5 %
~~0.58~~ ppm
0.67 0.69

*AB
9129 ✓*

*AB
9115 ✓*

RUN SUMMARY

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1** *14*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 12:40 End Time 13:40

Average Measured TRS Conc.

Recovery No. 3

TRS Corrected for Recovery

0.52 0.65

0.52 ppm

98.5 %

0.53 ppm

0.60
0.66

AB
9/129 ✓

AB
9/116 ✓

RUN SUMMARY

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 14**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 13:45 End Time 14:45

Average Measured TRS Conc.
Recovery No. 3
TRS Corrected for Recovery

~~0.67~~ 0.72
0.61 ppm
98.5 %
0.62 ppm
0.69 0.73

AB
9/129 ✓

AB
9/115

Client: **New Indy**
 Location: **Catawba, SC**
 Source: **Paper Machine Vent 1**

Project Number: **15730.001.008**
 Operator: **VD**
 Date: **25 Jun 2021**

Method: **16**
 Calibration: **1**

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RUN DATA

Number 5

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1

Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021

Method: 16
Calibration: 1

Time	H ₂ S				MeSH				DMS				DMDS				TRS			
	area	ppm	<	area	ppm	<	area	ppm	area	ppm	<	area	ppm	<	area	ppm	<	ppm	<	ppm
	PM vent 4	Run 2						0										0		
12:40	8	0.15		0.15		0.082	<2		24	0.27		<2			<2		0.024	0.55		
12:43	11	0.18		0.18	0.40		41		<2		0.07	25	0.09		0.07		0.83			
12:46	97	0.55		0.55		0.082	<2		<2		0.07	<2			0.07		0.75			
12:49	19	0.23		0.23		0.082	<2		<2		0.07	<2			0.07		0.43			
12:52	<2		0.071	0.07		0.082	<2		51	0.40		<2			<2		0.60			
12:55	13	0.19		0.19		0.082	<2		18	0.23		<2			<2		0.55			
12:58	<2		0.071	0.07	0.15		7		56	0.42		<2			<2		0.69			
13:01	7	0.14		0.14		0.082	<2		<2		0.07	28	0.10		0.07		0.49			
13:04	<2		0.071	0.07		0.082	<2		14	0.20		35	0.11				0.58			
13:07	68	0.46		0.46	0.18		9		10	0.17		<2			<2		0.85			
13:10	6	0.12		0.12		0.082	<2		25	0.27		14	0.07		0.07		0.61			
13:13	20	0.24		0.24			26		<2		0.07	<2			<2		0.67			
13:16	10	0.16		0.16	0.31		35		61	0.44		17	0.08		0.07		1.12			
13:19	23	0.26		0.26	0.37		<2		<2		0.07	<2			0.07		0.46			
13:22	<2		0.071	0.07		0.082	<2		12	0.18		23	0.09		<2		0.51			
13:25	44	0.37		0.37	0.42		45		5	0.12		<2			<2		0.95			
13:28	80	0.50		0.50		0.082	<2		<2		0.07	<2			<2		0.70			
13:31	<2		0.071	0.07		0.082	<2		27	0.29		<2			<2		0.49			
13:34	<2		0.071	0.07	0.23		14		<2		0.07	14	0.07		<2		0.50			
13:37	<2		0.071	0.07	0.25		17		10	0.17		33	0.11				0.71			
Averages				0.20													0.65			

RUN DATA

Number 6

Client: **New Indy** Project Number: **15730.001.008**
Location: **Catawba, SC** Operator: **VD**
Source: **Paper Machine Vent 1** Method: **16** Date: **25 Jun 2021**
Calibration: **1**

Time	H ₂ S			MeSH			DMS			DMSD			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
13:45	13	0.19		<2		0.082	<2		0.07	22	0.09			0.52	
13:48	11	0.18		<2		0.082	33	0.32		<2			0.024	0.62	
13:51	10	0.17		13	0.22		<2		0.07	11	0.06			0.57	
13:54	13	0.19		<2		0.082	<2		0.07	<2			0.024	0.39	
13:57	30	0.30		<2		0.082	<2		0.07	34	0.11			0.67	
14:00	117	0.61		<2		0.082	10	0.17		14	0.07			0.99	
14:03	26	0.28		<2		0.082	65	0.46		<2			0.024	0.86	
14:06	37	0.33		9	0.18		<2		0.07	7	0.05			0.68	
14:09	27	0.28		<2		0.082	21	0.25		<2			0.024	0.66	
14:12	5	0.12		15	0.24		<2		0.07	<2			0.024	0.48	
14:15	5	0.12		14	0.22		26	0.28		16	0.07			0.77	
14:18	25	0.27		8	0.17		29	0.30		<2			0.024	0.78	
14:21	49	0.38		<2		0.082	<2		0.07	<2			0.024	0.58	
11:31	51	0.39		6	0.15		<2		0.07	12	0.06			0.74	
14:27	119	0.62		<2		0.082	<2		0.07	<2			0.024	0.82	
14:30	56	0.41		13	0.22		10	0.17		23	0.09			0.98	
14:33	59	0.42		31	0.35		<2		0.07	<2			0.024	0.89	
14:36	40	0.35		<2		0.082	4	0.11		<2			0.024	0.58	
14:39	23	0.26		11	0.20		92	0.55		<2			0.024	1.05	
14:42	30	0.30		33	0.36		<2		0.07	<2			0.024	0.77	
Averages		0.31												0.72	

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1** 4

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
PM Vent 4 Run 1									
11:35	25	0.27	<2	<0.08	<2	<0.07	50	0.14	0.55
11:38	<2	<0.07	<2	<0.08	8	0.15	<2	<0.02	0.15
11:41	<2	<0.07	145	0.77	<2	<0.07	<2	<0.02	0.77
11:44	26	0.27	26	0.31	<2	<0.07	<2	<0.02	0.59
11:47	38	0.34	23	0.30	27	0.28	<2	<0.02	0.92
11:50	43	0.36	27	0.32	<2	<0.07	14	0.07	0.82
11:53	41	0.35	<2	<0.08	28	0.29	<2	<0.02	0.64
11:56	36	0.33	4	0.11	<2	<0.07	<2	<0.02	0.44
11:59	37	0.33	<2	<0.08	27	0.28	49	0.13	0.88
12:02	<2	<0.07	11	0.20	13	0.19	11	0.06	0.51
12:05	<2	<0.07	<2	<0.08	<2	<0.07	16	0.07	0.15
12:08	63	0.44	13	0.22	34	0.32	<2	<0.02	0.98
12:11	30	0.29	7	0.16	57	0.42	<2	<0.02	0.88
12:14	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
12:17	29	0.29	18	0.26	<2	<0.07	<2	<0.02	0.55
12:20	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
12:23	8	0.14	35	0.37	<2	<0.07	<2	<0.02	0.51
12:26	14	0.20	<2	<0.08	17	0.22	35	0.11	0.65
12:29	<2	<0.07	4	0.12	18	0.23	<2	<0.02	0.36
12:32	58	0.42	7	0.16	12	0.19	<2	<0.02	0.77
Average		0.20		0.17		0.13		0.03	0.56

RUN DATA

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent # 4**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
PM vent 4 Run 2									
12:40	8	0.15	<2	<0.08	24	0.27	<2	<0.02	0.42
12:43	11	0.18	41	0.40	<2	<0.07	25	0.09	0.76
12:46	97	0.55	<2	<0.08	<2	<0.07	<2	<0.02	0.55
12:49	19	0.23	<2	<0.08	<2	<0.07	<2	<0.02	0.23
12:52	<2	<0.07	<2	<0.08	51	0.40	<2	<0.02	0.40
12:55	13	0.19	<2	<0.08	18	0.23	<2	<0.02	0.42
12:58	<2	<0.07	7	0.15	56	0.42	<2	<0.02	0.58
13:01	7	0.14	<2	<0.08	<2	<0.07	28	0.10	0.34
13:04	<2	<0.07	<2	<0.08	14	0.20	35	0.11	0.43
13:07	68	0.46	9	0.18	10	0.17	<2	<0.02	0.81
13:10	6	0.12	<2	<0.08	25	0.27	14	0.07	0.53
13:13	20	0.24	26	0.31	<2	<0.07	<2	<0.02	0.56
13:16	10	0.16	35	0.37	61	0.44	17	0.08	1.12
13:19	23	0.26	<2	<0.08	<2	<0.07	<2	<0.02	0.26
13:22	<2	<0.07	<2	<0.08	12	0.18	23	0.09	0.36
13:25	44	0.37	45	0.42	5	0.12	<2	<0.02	0.90
13:28	80	0.50	<2	<0.08	<2	<0.07	<2	<0.02	0.50
13:31	<2	<0.07	<2	<0.08	27	0.29	<2	<0.02	0.29
13:34	<2	<0.07	14	0.23	<2	<0.07	14	0.07	0.36
13:37	<2	<0.07	17	0.25	10	0.17	33	0.11	0.64
Average		0.18		0.12		0.16		0.04	0.52

RUN DATA

Number 6

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1** *4*

Method **16**
Calibration **1**

Project Number: **15730.001.008**

Operator: **VD**

Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
13:45	13	0.19	<2	<0.08	<2	<0.07	22	0.09	0.37
13:48	11	0.18	<2	<0.08	33	0.32	<2	<0.02	0.49
13:51	10	0.17	13	0.22	<2	<0.07	11	0.06	0.50
13:54	13	0.19	<2	<0.08	<2	<0.07	<2	<0.02	0.19
13:57	30	0.30	<2	<0.08	<2	<0.07	34	0.11	0.52
14:00	117	0.61	<2	<0.08	10	0.17	14	0.07	0.91
14:03	26	0.28	<2	<0.08	65	0.46	<2	<0.02	0.73
14:06	37	0.33	9	0.18	<2	<0.07	7	0.05	0.61
14:09	27	0.28	<2	<0.08	21	0.25	<2	<0.02	0.53
14:12	5	0.12	15	0.24	<2	<0.07	<2	<0.02	0.36
14:15	5	0.12	14	0.22	26	0.28	16	0.07	0.77
14:18	25	0.27	8	0.17	29	0.30	<2	<0.02	0.73
14:21	49	0.38	<2	<0.08	<2	<0.07	<2	<0.02	0.38
14:24	51	0.39	6	0.15	<2	<0.07	12	0.06	0.67
14:27	119	0.62	<2	<0.08	<2	<0.07	<2	<0.02	0.62
14:30	56	0.41	13	0.22	10	0.17	23	0.09	0.98
14:33	59	0.42	31	0.35	<2	<0.07	<2	<0.02	0.77
14:36	40	0.35	<2	<0.08	4	0.11	<2	<0.02	0.45
14:39	23	0.26	11	0.20	92	0.55	<2	<0.02	1.00
14:42	30	0.30	33	0.36	<2	<0.07	<2	<0.02	0.65
Average		0.31		0.11		0.13		0.03	0.61

RUN DATA

Number 14

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *A 4*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
Calibration drift check									
20:16	14345	7.84	<2	<0.08	<2	<0.07	<2	<0.02	7.84
20:19	14713	7.94	<2	<0.08	<2	<0.07	<2	<0.02	7.94
20:22	14122	7.77	<2	<0.08	<2	<0.07	<2	<0.02	7.77
Average		7.85		<0.08		<0.07		<0.02	7.85

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 14**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

After Run 3 Before Run 4
Start Time 11:06 End Time 11:15

Recovery Gas to Probe, Time 11:06

Peak Areas, mv-sec			Average	ppm
13991	13801	13923	13905	7.71

Recovery Gas to GC, Time 11:12

Peak Areas, mv-sec			Average	ppm
14345	14801	14524	14556	7.90

Recovery 97.6%

1/14

RECOVERY DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *4*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

After Run 6 Before Run 10
Start Time 14:45 End Time 14:58

Recovery Gas to Probe, Time 14:45

Peak Areas, mv-sec			Average	ppm
14557	13955	14506	14339	7.83

Recovery Gas to GC, Time 14:54

Peak Areas, mv-sec			Average	ppm
15125	14482	14672	14759	7.95

Recovery 98.5%

1/24

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent #4**

Method 16

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
<hr/>				
1 Flow = 42.9 mL/Min	10.7 ppm	10.7 ppm	6.95 ppm	5.41 ppm
Time: 06:02	Peak Areas, mv-sec			
	25099	20594	10407	44232
	24750	21533	10445	46016
	25597	21979	10703	45950
Average Area	25149	21369	10519	45399
<hr/>				
2 Flow = 82.8 mL/Min	5.56 ppm	5.52 ppm	3.60 ppm	2.80 ppm
Time: 06:53	Peak Areas, mv-sec			
	7926	6406	2923	14068
	7950	6306	2884	13591
	8444	6460	2990	14698
Average Area	8107	6390	2932	14119
<hr/>				
3 Flow = 130 mL/Min	3.54 ppm	3.52 ppm	2.29 ppm	1.79 ppm
Time: 07:08	Peak Areas, mv-sec			
	3069	2599	1371	5786
	3064	2578	1331	5729
	3088	2512	1340	5842
Average Area	3074	2563	1347	5786

1/ndh

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 14**

Method 16

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

H ₂ S	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.56	3.54			
Area, mv-sec	25149	8107	3074			
Calc. Conc., ppm	10.6	5.79	3.46			
% Error	-1.6	4.2	-2.4			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8847	2.4717	0.9980	2	0.07	
MeSH	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.52	3.52			
Area, mv-sec	21369	6390	2563			
Calc. Conc., ppm	10.6	5.62	3.48			
% Error	-0.7	1.8	-1.1			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9089	2.3742	0.9996	2	0.08	
DMS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	6.95	3.60	2.29			
Area, mv-sec	10519	2932	1347			
Calc. Conc., ppm	7.00	3.53	2.32			
% Error	0.8	-2.0	1.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8617	2.4483	0.9995	2	0.07	
DMDS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	5.41	2.80	1.79			
Area, mv-sec	45399	14119	5786			
Calc. Conc., ppm	5.37	2.86	1.77			
% Error	-0.8	2.0	-1.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8537	3.3043	0.9995	2	0.02	

14

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1 4**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

H₂S	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	10.5	6.99	3.74		
Area, mv-sec	24392	13907	4527		
Calc. Conc., ppm	10.3	7.29	3.68		
% Error	-2.5	4.3	-1.6		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.6380	2.7299	0.9976	2	0.03
MeSH	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	10.5	6.95	3.71		
Area, mv-sec	23509	12131	3753		
Calc. Conc., ppm	10.3	7.11	3.68		
% Error	-1.4	2.4	-0.9		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7779	2.5690	0.9992	2	0.05
DMS	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	6.82	4.53	2.42		
Area, mv-sec	10516	5246	1551		
Calc. Conc., ppm	6.73	4.63	2.40		
% Error	-1.3	2.2	-0.9		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8539	2.4865	0.9993	2	0.07
DMDS	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	5.31	3.53	1.88		
Area, mv-sec	48003	24800	7538		
Calc. Conc., ppm	5.23	3.62	1.86		
% Error	-1.6	2.7	-1.0		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7949	3.3916	0.9990	2	0.02

✓

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *14*

Method 16

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1	Flow = 43.6 mL/Min	10.5 ppm	10.5 ppm	6.82 ppm	5.31 ppm
	Time: 19:32	Peak Areas, mv-sec			
		23668	22380	10086	46114
		24884	23771	10653	47622
		24624	24375	10810	50274
	Average Area	24392	23509	10516	48003

2	Flow = 65.8 mL/Min	6.99 ppm	6.95 ppm	4.53 ppm	3.53 ppm
	Time: 19:43	Peak Areas, mv-sec			
		14069	11744	5164	24545
		13746	12537	5293	24899
		13905	12112	5280	24958
	Average Area	13907	12131	5246	24800

3	Flow = 123 mL/Min	3.74 ppm	3.71 ppm	2.42 ppm	1.88 ppm
	Time: 19:59	Peak Areas, mv-sec			
		4288	3691	1547	7409
		4623	3823	1561	7662
		4672	3745	1545	7541
	Average Area	4527	3753	1551	7538

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1 4**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642	901	758	895
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70) \\ = 460 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 14**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

File: E:\6-25-21.trs
Program Version: 2.0, built 21 Feb 2015 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press. psi	Flow mL/min		
H ₂	30	50	Column: 100	Primary: 3'
Air	30	60	Detector: 120	Secondary:
Carrier	50	30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 4**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 4 Run 1				
12:46:45	6775	20.2	34	0.2
12:47:00	6777	20.2	34	0.2
12:47:15	6777	20.2	34	0.2
12:47:30	6775	20.2	35	0.2
12:47:45	6775	20.2	34	0.2
12:48:00	6777	20.2	34	0.2
12:48:15	6776	20.2	34	0.2
12:48:30	6778	20.2	35	0.2
12:48:45	6775	20.2	32	0.2
12:49:00	6776	20.2	31	0.2
12:49:15	6780	20.2	30	0.2
12:49:30	6775	20.2	31	0.2
12:49:45	6774	20.2	34	0.2
12:50:00	6777	20.2	32	0.2
12:50:15	6778	20.2	33	0.2
12:50:30	6776	20.2	32	0.2
12:50:45	6776	20.2	33	0.2
12:51:00	6776	20.2	32	0.2
12:51:15	6776	20.2	32	0.2
12:51:30	6776	20.2	31	0.2
12:51:45	6774	20.2	31	0.2
Avg	6776	20.2	33	0.2

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 4**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 4 Run 2				
13:48:57	6773	20.2	34	0.2
13:49:12	6775	20.2	33	0.2
13:49:27	6775	20.2	34	0.2
13:49:42	6776	20.2	34	0.2
13:49:57	6774	20.2	34	0.2
13:50:12	6777	20.2	34	0.2
13:50:27	6775	20.2	33	0.2
13:50:42	6774	20.2	34	0.2
13:50:57	6776	20.2	34	0.2
13:51:12	6775	20.2	34	0.2
13:51:27	6774	20.2	34	0.2
13:51:42	6776	20.2	34	0.2
13:51:57	6773	20.2	34	0.2
13:52:12	6775	20.2	34	0.2
13:52:27	6766	20.2	35	0.2
13:52:42	6772	20.2	34	0.2
13:52:57	6775	20.2	34	0.2
13:53:12	6774	20.2	35	0.2
13:53:27	6774	20.2	34	0.2
13:53:42	6775	20.2	35	0.2
13:53:57	6775	20.2	34	0.2
13:54:12	6775	20.2	34	0.2
13:54:27	6773	20.2	35	0.2
13:54:42	6774	20.2	34	0.2
Avg	6774	20.2	34	0.2

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 4**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 4 Run 3				
15:01:47	6759	20.2	52	0.2
15:02:02	6759	20.2	51	0.2
15:02:17	6761	20.2	50	0.2
15:02:32	6759	20.2	49	0.2
15:02:47	6758	20.2	51	0.2
15:03:02	6761	20.2	51	0.2
15:03:17	6760	20.2	51	0.2
15:03:32	6760	20.2	53	0.2
15:03:47	6759	20.2	52	0.2
15:04:02	6758	20.2	51	0.2
15:04:17	6759	20.2	51	0.2
15:04:32	6761	20.2	52	0.2
15:04:47	6758	20.2	53	0.2
15:05:02	6759	20.2	52	0.2
15:05:17	6759	20.2	52	0.2
15:05:32	6760	20.2	52	0.2
15:05:47	6760	20.2	51	0.2
15:06:02	6759	20.2	52	0.2
15:06:17	6759	20.2	52	0.2
15:06:32	6759	20.2	52	0.2
15:06:47	6759	20.2	52	0.2
Avgs	6759	20.2	52	0.2

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 4**

Project Number: **15730.001.008**

Operator: **VD**

Date: **25 Jun 2021**

Start Time: 08:20

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	8
10.1 ✓	SG9168283BAL	3287
19.5 ✓	CC454190	6576

Curve Coefficients

Slope	Intercept	Corr. Coeff.
336.7	-31 ✓	0.9998 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	5
10.2 ✓	SG9168283BAL	3276
20.4 ✓	CC454190	6722

Curve Coefficients

Slope	Intercept	Corr. Coeff.
329.3	-20 ✓	0.9999 ✓

✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 4**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **25 Jun 2021**

Start Time: 08:20

O₂

Method: EPA 3A

Span Conc. 19.5 %

Slope 336.7

Intercept -31.5

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	8	0.1	0.1	0.5 ✓	Pass
10.1	3287	9.9	-0.2	-1.0 ✓	Pass
19.5	6576	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.4 %

Slope 329.3

Intercept -19.9

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	5	0.1	0.1	0.5 ✓	Pass
10.2	3276	10.0	-0.2	-1.0 ✓	Pass
20.4	6722	20.5	0.1	0.5	Pass

AW

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 4**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-25-21b.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 6

New Indy
Catawba, SC

15730.001.008
No. 6 Hood Exhaust
Paper Machine Vent 6

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	---
Time Began	1555	1715	1820	---
Time Ended	1655	1816	1920	---
Volumetric Flow Rate, (Qs), DSCFM	4.18E+04	4.18E+04	4.21E+04	4.19E+04
BWS	0.254	0.264	0.219	0.245
% Oxygen	20.2	20.2	20.2	20.2
Recovery, %	98.2	98.2	98.2	98.2
<hr/>				
Total Reduced Sulfur	(TRS MW)=	34.08		
Concentration, ppm	0.70	0.71	0.69	0.70
Emission Rate, lb/hr	0.16	0.16	0.15	0.16
<hr/>				
H2S	(H2S MW)=	34.08		
Concentration, ppm	0.21	0.22	0.22	0.22
Concentration, ppm (Corrected for Recovery)	0.21	0.22	0.22	0.22
Emission Rate, lb/hr	0.05	0.05	0.05	0.05

New Indy
Catawba, SC

15730.001.008
No. 6 Hood Exhaust

Paper Machine Vent 6

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/25/21 ✓	6/25/21 ✓	6/25/21 ✓	---
Time Began	1555 ✓	1715 ✓	1820 ✓	---
Time Ended	1659 ✓	1808 ✓	1914 ✓	---

INPUT DATA

Sampling Time, min	(Theta)	48.0 ✓	48 ✓	48 ✓	48
Stack Diameter, in.	(Dia.)	52 ✓	52 ✓	52 ✓	52
Barometric Pressure, in. Hg	(Pb)	29.68 ✓	29.68 ✓	29.68 ✓	29.68
Static Pressure, in. H2O	(Pg)	-0.75 ✓	-0.75 ✓	-0.75 ✓	-0.75
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.0030 ✓	1.0030 ✓	1.0030 ✓	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 ✓	1.8000 ✓	1.8000 ✓	1.8000
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	30.737 ✓	31.150 ✓	31.398 ✓	31.095
Meter Temperature, °F	(Tm)	87.9 ✓	92.5 ✓	91.9 ✓	90.8
Meter Temperature, °R	(Tm-R)	547.9	552.5	551.9	550.8
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	213.5 ✓	226.0 ✓	178.5 ✓	206.0
CO2 Concentration, %	(CO2)	0.2 ✓	0.2 ✓	0.2 ✓	0.2
O2 Concentration, %	(O2)	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	1.196 ✓	1.210 ✓	1.158 ✓	1.188
Stack Temperature, °F	(Ts)	191.3 ✓	191.2 ✓	190.3 ✓	190.9
Stack Temperature, °R	(Ts-R)	651.3	651.2	650.3	650.9
Moisture Fraction (at Saturation)	(BWS)	0.660	0.659	0.646	0.655

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04 ✓	3.41E-04 ✓	3.41E-04 ✓	3.41E-04
Stack Area, ft ²	(As)	14.75 ✓	14.75 ✓	14.75 ✓	14.75
Stack Pressure, in. Hg	(Ps)	29.62	29.62	29.62	29.62
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft ³	(Vmstd)	29.554	29.702	29.971	29.742
Standard Water Volume, ft ³	(Vwstd)	10.049	10.638	8.402	9.696
Moisture Fraction (Measured)	(BWS)	0.254	0.264	0.219	0.245
Moisture Fraction (lower sat/meas)	(BWS)	0.254	0.264	0.219	0.245
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.09	25.98	26.47	26.18
Average Stack Gas Velocity, ft/sec	(Vs)	78.85	79.90	75.73	78.16
Stack Gas Flow, actual, ft ³ /min	(Qa)	69772	70706	67009	69162
Stack Gas Flow, Std, ft ³ /min	(Qs)	41777	41778	42058	41871
Calibration check	(Yqa)	1.0196	1.0103	1.0018	1.011
Percent difference from Y					0.76%

AM

no. 6 Hood Exhaust

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source no. 6 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730 001.008
 Run Number 1
 Date 6/25/21
 Test Personnel BEA/BCE
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR66-6'
 Liner Material SS
 Pitot ID/Coeff. P77 0.84
 Thermo ID A023
 Nozzle ID/Diams. .250
 Avg. Nozzle Diam. .250 in.

Ambient Temp. 81 °F
 Baro. Pressure* 29.68 in. Hg
 Static Pressure -.75 in. H₂O
 Impinger Gain 204.7 mL
 Silica Gel Gain 8.8 g
 Stack Area 19.75 ft²
 Total Traverse Points 16

K Factor N/A

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>0.002</u>	<u>0.000</u>
Pitot	<u>12"</u>	<u>5"</u>
	<u>Good</u>	<u>Good</u>

Filter ID N/A
 Sample ID Run 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	15:55			913.344									
	3		1.7	1.3	915.1	189	N/A	87	243	252	N/A	65	2	
2	6		1.4	1.3	917.0	192		87	243	254		62	2	
3	9		1.2	1.3	919.0	192		87	242	250		56	2	
4	12		1.4	1.3	920.9	193		87	242	253		56	2	
5	15		1.5	1.3	922.8	192		87	241	256		58	2	
6	18		1.4	1.3	924.7	192		87	244	249		60	2	
7	21		1.6	1.3	926.7	192		87	245	254		61	2	
8	24		1.6	1.3	928.6	191		88	241	253		61	2	
B-1	27		1.2	1.3	930.5	189		88	241	250		66	2	
2	30		1.1	1.3	932.5	190		88	240	251		64	2	
3	33		1.1	1.3	934.4	191		88	243	253		66	2	
4	36		1.4	1.3	936.3	191		89	241	256		64	2	
5	39		1.5	1.3	938.2	191		89	242	247		61	2	
6	42		1.7	1.3	940.2	193		89	240	247		61	2	
7	45		1.6	1.3	942.1	192		90	243	257		61	2	
8	48	16:59	1.6	1.3	944.081	191		89	242	245		59	2	
*Barometric Pressure is at port elevation			Avg. V _{sp}	Avg. ΔH	Total Volume	Avg T _g	Avg T _m	O ₂ /CO ₂	by Orsat	Fyrite M3A	Thermocouple Check	Meter Temp., °F	% Isokinetic	QC by
			1.1961	1.300	30.737	191.3	87.9	240/245	245/257	245/257	Min/Max	Max Temp	Max Vac	Result
			1.43751	1.1902										



Integrated Air Services

15730.001.008
 Pulp Dryer, #3 Paper Machine,
 #2-3 #01's, & #1-2 CBs
 Emission Report

No. 4 Hood Exhaust

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A623	Ambient Temp.	82 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.003	Baro. Pressure*	27.68 in. Hg
Source	No. 4 Hood Exhaust	Console ΔH@	1.800	Static Pressure*	7.5 in. H ₂ O
Sample Location	15730.001.008	Probe ID/Length	PR66-6'	Impinger Gain	218.6 mL
W. O. Number	2	Liner Material	55	Silica Gel Gain	7.4 g
Run Number		Pitot ID/Coeff.	P77		
Date	6/25/21	Thermo ID	A623	Stack Area	14.75 ft ²
Test Personnel	B24/B2	Nozzle ID/Diams.			
Sample Time	48 min.	Avg. Nozzle Diam.	.250 in.	Total Traverse Points	16

K Factor	N/A
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Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	12"	12"
Pitot	6000	6000

Filter ID N/A
Sample ID run 2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	17:15	1.3	1.3	945.144	191	N/A	90	245	249	N/A	65	34	
2	3		1.2	1.3	947.1	171	91	241	255	255		65	34	
3	6		1.2	1.3	949.0	191	91	244	255	255		65	34	
4	9		1.1	1.3	951.0	191	91	243	250	250		63	4	
5	12		1.5	1.3	953.0	191	92	242	254	254		64	4	
6	15		1.5	1.3	954.8	191	92	244	256	256		64	4	
7	18		1.7	1.3	956.8	192	93	240	246	246		65	4	
8	21		1.7	1.3	958.7	192	93	241	249	249		65	4	
B-1	24		1.5	1.3	960.6	192	92	242	257	257		67	4	
2	27		1.5	1.3	962.6	190	93	244	246	246		61	4	
3	30		1.5	1.3	964.5	192	93	243	251	251		69	4	
4	33		1.6	1.3	966.5	192	94	244	256	256		57	4	
5	36		1.5	1.3	968.4	191	93	243	255	255		55	4	
6	39		1.5	1.3	970.3	191	94	244	243	243		54	4	
7	42		1.6	1.3	972.3	191	94	244	244	244		55	4	
8	45		1.6	1.3	974.2	190	94	241	243	243		55	4	
	48	18:08	1.6	1.3	976.244	190	94	241	243	243		55	4	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _g	Avg T _m	Min/Max	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _m -std, scf
			1.2097	1.300	31.15	191.2	92.5	240/245	243/257	243/257	243/257	67/1	4	



Integrated Air Services

Flue Gas Composition
Oxygen, % 20.2
Carbon Dioxide, % 8.2
Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
Leak Check, Pre-run
Post-run

Thermocouple Check
Meter Temp., °F 87
Ref. Temp., °F 87
Result

Q_s, dscfm
% Isokinetic
Calculated by
QC by

NO. 6 Hood Exhaust

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source NO. 4 Hood Exhaust
 Sample Location DOEF
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/25/21
 Test Personnel DEA/DE
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR6C-6"
 Liner Material 53
 Pitot ID/Coeff. PR6C-6" 0.84 927
 Thermo ID A023
 Nozzle ID/Diams. 250
 Avg. Nozzle Diam. 250 in.

Ambient Temp. 82 °F
 Baro. Pressure* 27.68 in. Hg
 Static Pressure -7.5 in. H₂O
 Impinger Gain 170.9 mL
 Silica Gel Gain 7.6 g
 Stack Area 14.75 ft²
 Total Traverse Points 16

K Factor 11A
 Leak Checks
 Volume, ft³ 0.062
 @ Vac., in. Hg 12"
 Pitot Good
 Initial 0.000
 Final 5"

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	18:20	1.6	1.3	976.578	191	N/A	92	243	245	N/A	66	2	
2	3		1.6	1.3	978.7	191		92	245	248		59	2	
3	6		1.6	1.3	980.7	191		92	244	252		55	2	
4	9		1.6	1.3	982.7	191		72	246	245		52	2	
5	12		1.5	1.3	984.6	191		93	245	251		53	2	
6	15		1.6	1.3	986.6	191		72	245	256		53	2	
7	18		1.5	1.3	988.5	191		92	241	258		53	2	
8	21		1.6	1.3	990.4	191		92	241	249		53	2	
B-1	24		1.6	1.3	992.3	190		72	239	250		57	2	
2	27		1.2	1.3	994.3	188		92	242	250		54	2	
3	30		1.3	1.3	996.2	189		92	240	246		53	2	
4	33		1.3	1.3	998.1	189		92	242	251		54	2	
5	36		.71	1.3	1000.1	190		91	240	250		55	2	
6	39		.70	1.3	1002.0	190		92	241	251		54	2	
7	42		.68	1.3	1003.9	190		91	241	249		55	2	
8	45		1.7	1.3	1005.9	191		91	241	249		55	2	
8	48	19:14	1.7	1.3	1007.976	191		91	242	244		56	2	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _m std, scf
			1.1579	1.300	31.398	190.3	91.9		239/246	244/258		66	2	



Integrated Air Services

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 0.2
 Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

QC by 23
 Calculated by
 % Isokinetic
 Q_s, dscfm
 V_m std, scf

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 3 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/25/21 Recovery Date 6/25/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Final	881.3	878.9	671.8		868.6	
Initial	753.7	815.1	658.5	✓	859.8	
Gain	127.6 ✓	63.8 ✓	13.3 ✓	204.7	8.8 ✓	213.5 ✓

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Run No. 2 Sample Date 6/25/21 Recovery Date 6/25/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Final	945.2	711.1	558.6		908.4	
Initial	775.7	666.8	553.8	✓	901.0	
Gain	169.5 ✓	44.3 ✓	4.8 ✓	218.6	7.4 ✓	226 ✓

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Run No. 3 Sample Date 6/25/21 Recovery Date 6/25/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Final	857.8	783.2	637.4		873.4	
Initial	714.5	759.7	633.3	✓	865.8	
Gain	143.3 ✓	23.5 ✓	4.1 ✓	170.9	7.6 ✓	178.5 ✓

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Check COC for Sample IDs of Media Blanks

WESTON
SOLUTIONS®
Integrated Air Services

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
 Pulp Dyer, #3 Paper Machine,
 #2-3 SDTVs, & #1-2 CBs
 Emission Report

Client New Indy
 Location/Plant Catawba, SC
 Source No. 6 Hood Exhaust

Operator VD / LF
 Date 15-Jun-21
 W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
 Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	52.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	52
Area of Duct (ft ²)	14.75
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)

Total Ports (rectangular duct only)

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	1 1/2	2
2	10.5	5 1/2	5 1/2
3	19.4	10	10
4	32.3	17	17
5	67.7	35	35 1/2
6	80.6	42	42
7	89.5	46 1/2	46 1/2
8	96.8	50 1/2	50 1/2
9			
10			
11			
12			

Equivalent Diameter = $(2 * L * W) / (L + W)$

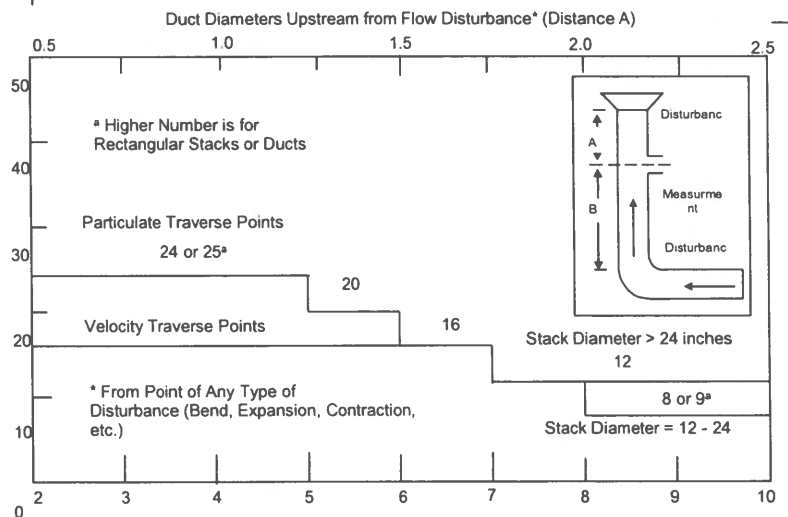
Traverse Point Location Percent of Stack -Circular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3				75		29.6		19.4		14.6		11.8
	4				93.3		70.4		32.3		22.6		17.7
	5						85.4		67.7		34.2		25
	6						95.6		80.6		65.8		35.6
	7								89.5		77.4		64.4
	8								96.8		85.4		75
	9										91.8		82.3
	10										97.4		88.2
	11												93.3
	12												97.9

Flow Disturbances

Upstream - A (ft)	4.330
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.00
Downstream - B (duct diameters)	5.77

Diagram of Stack



Traverse Point Location Percent of Stack -Rectangular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
	6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7							92.9	81.3	72.2	65.0	59.1	54.2
	8								93.8	83.3	75.0	68.2	62.5
	9									94.4	85.0	77.3	70.8
	10										95.0	86.4	79.2
	11											95.5	87.5
	12												95.8

Rectangular Stack Points & Matrix

9 - 3 x 3

12 - 4 x 3

16 - 4 x 4

20 - 5 x 4

25 - 5 x 5

30 - 6 x 5

36 - 6 x 6

42 - 7 x 6

49 - 7 x 7

Port Diam. (in) = 4
 Number of Ports = 2

Tape Measure I.D. # TM-07



RUN SUMMARY

Number 11

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *10*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 15:55 End Time 16:55

Average Measured TRS Conc.

Recovery No. 5

TRS Corrected for Recovery

0.63 0.69

~~0.56~~ ppm

98.2 %

~~0.57~~ ppm

0.64

0.70

*AB
9/129 ✓*

*AB
9/115 ✓*

RUN SUMMARY

Number 12

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** 16

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 17:15 End Time 18:16

Average Measured TRS Conc.

Recovery No. 5

TRS Corrected for Recovery

~~0.67~~ 0.70

0.58 ppm

98.2 %

~~0.59~~ ppm

~~0.65~~
0.71

A3
9115

A3
9129 ✓

RUN SUMMARY

Number 13

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1.6**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 18:20 End Time 19:20

Average Measured TRS Conc.

~~0.63~~ 0.68

0.57 ppm

Recovery No. 5

98.2 %

TRS Corrected for Recovery

~~0.59~~ ppm

~~0.64~~
0.69

AB
9/23 ✓

RUN DATA

Number 11

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1 *6/29*
Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
15:55	46	0.37		26	0.31		<2		0.07	15	0.07		0.90	
15:58	<2		0.071	14	0.23		16	0.21		<2		0.024	0.56	
16:01	21	0.25		<2		0.082	<2		0.07	19	0.08		0.56	
16:04	111	0.59		<2		0.082	39	0.35		<2		0.024	1.07	
16:07	<2		0.071	<2		0.082	14	0.20		37	0.12		0.58	
16:10	<2		0.071	15	0.23		95	0.56		<2		0.024	0.91	
16:13	23	0.26		<2		0.082	11	0.18		3	0.03		0.57	
16:16	7	0.14		<2		0.082	<2		0.07	<2		0.024	0.34	
16:19	<2		0.071	<2		0.082	9	0.16		<2		0.024	0.36	
16:22	43	0.36		24	0.30		39	0.35		<2		0.024	1.05	
16:25	<2		0.071	<2		0.082	25	0.27		54	0.14		0.71	
16:28	<2		0.071	<2		0.082	28	0.29		<2		0.024	0.49	
16:31	21	0.25		<2		0.082	20	0.24		50	0.14		0.84	
16:34	9	0.16		18	0.26		<2		0.07	<2		0.024	0.53	
16:37	42	0.35		<2		0.082	74	0.49		26	0.10		1.12	
16:40	<2		0.071	<2		0.082	17	0.22		19	0.08		0.54	
16:43	41	0.35		<2		0.082	13	0.19		23	0.09		0.80	
16:46	21	0.25		<2		0.082	<2		0.07	32	0.11		0.61	
16:49	29	0.29		<2		0.082	7	0.14		<2		0.024	0.56	
16:52	<2		0.071	<2		0.082	63	0.45		8	0.05		0.71	
Averages														0.69

RUN DATA

Number 12

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent #6 9/29
Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
17:15	<2		0.071	0.07	0.28		16	0.22		16	0.07		0.72
17:18	14	0.19		0.19	0.44		<2		0.07	<2		0.024	0.75
17:21	9	0.16		0.16	0.49		41	0.36		19	0.08		1.17
17:24	<2		0.071	0.07	0.12		14	0.20		18	0.08		0.54
17:27	<2		0.071	0.07		0.082	<2		0.07	<2		0.024	0.27
17:30	<2		0.071	0.07		0.082	14	0.20		6	0.04		0.44
17:33	10	0.16		0.16		0.082	<2		0.07	<2		0.024	0.36
17:36	5	0.12		0.12	0.34		<2		0.07	27	0.10		0.73
17:39	9	0.15		0.15	0.15		<2		0.07	<2		0.024	0.42
17:42	38	0.34		0.34		0.082	<2		0.07	<2		0.024	0.54
17:45	21	0.24		0.24	0.37		19	0.23		<2		0.024	0.89
17:48	21	0.25		0.25	0.19		<2		0.07	30	0.10		0.71
17:52	63	0.44		0.44		0.082	<2		0.07	<2		0.024	0.64
17:55	4	0.10		0.10		0.082	37	0.34		24	0.09		0.70
17:58	19	0.23		0.23	0.49		12	0.19		<2		0.024	0.96
18:01	52	0.40		0.40	0.39		<2		0.07	20	0.08		1.02
18:04	15	0.21		0.21	0.44		<2		0.07	<2		0.024	0.77
18:07	89	0.53		0.53		0.082	37	0.34		<2		0.024	0.99
18:10	51	0.39		0.39		0.082	<2		0.07	70	0.16		0.87
18:13	10	0.17		0.17		0.082	<2		0.07	16	0.07		0.47
Averages													0.70

RUN DATA

Number 13

Client: New Indy
 Location: Catawba, SC
 Source: Paper Machine Vent 16 9/28

Project Number: 15730.001.008
 Operator: VD
 Date: 25 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
18:20	8	0.14		<2	0.14	0.082	10	0.17		30	0.10		0.60	
18:23	<2		0.071	22	0.07		<2		0.07	<2		0.024	0.48	
18:26	10	0.16		<2	0.16	0.082	27	0.28		19	0.08		0.69	
18:29	9	0.16		<2	0.16	0.082	11	0.18		40	0.12		0.65	
18:32	8	0.15		<2	0.15	0.082	<2		0.07	45	0.13		0.56	
18:35	33	0.31		14	0.31		27	0.28		19	0.08		0.98	
18:38	17	0.22		<2	0.22	0.082	<2		0.07	<2		0.024	0.42	
18:41	8	0.15		15	0.15		31	0.30		111	0.21		1.11	
18:44	<2		0.071	7	0.07		29	0.30		33	0.11		0.75	
18:47	14	0.20		<2	0.20	0.082	23	0.26		36	0.11		0.77	
18:50	31	0.30		<2	0.30	0.082	<2		0.07	17	0.08		0.61	
18:53	<2		0.071	<2	0.07	0.082	51	0.40		14	0.07		0.69	
18:56	8	0.15		<2	0.15	0.082	22	0.25		9	0.05		0.59	
18:59	12	0.18		<2	0.18	0.082	11	0.18		29	0.10		0.64	
19:02	56	0.41		8	0.41		<2		0.07	<2		0.024	0.70	
19:05	68	0.46		13	0.46		4	0.10		<2		0.024	0.82	
19:08	<2		0.071	<2	0.07	0.082	<2		0.07	<2		0.024	0.27	
19:11	97	0.55		<2	0.55	0.082	<2		0.07	72	0.17		1.04	
19:14	42	0.35		<2	0.35	0.082	20	0.24		<2		0.024	0.72	
19:17	14	0.20		13	0.20	0.082	6	0.12		<2		0.024	0.59	
Averages					0.22								0.68	

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *✓*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
15:55	46	0.37	26	0.31	<2	<0.07	15	0.07	0.83
15:58	<2	<0.07	14	0.23	16	0.21	<2	<0.02	0.44
16:01	21	0.25	<2	<0.08	<2	<0.07	19	0.08	0.41
16:04	111	0.59	<2	<0.08	39	0.35	<2	<0.02	0.94
16:07	<2	<0.07	<2	<0.08	14	0.20	37	0.12	0.43
16:10	<2	<0.07	15	0.23	95	0.56	<2	<0.02	0.79
16:13	23	0.26	<2	<0.08	11	0.18	3	0.03	0.49
16:16	7	0.14	<2	<0.08	<2	<0.07	<2	<0.02	0.14
16:19	<2	<0.07	<2	<0.08	9	0.16	<2	<0.02	0.16
16:22	43	0.36	24	0.30	39	0.35	<2	<0.02	1.00
16:25	<2	<0.07	<2	<0.08	25	0.27	54	0.14	0.56
16:28	<2	<0.07	<2	<0.08	28	0.29	<2	<0.02	0.29
16:31	21	0.25	<2	<0.08	20	0.24	50	0.14	0.76
16:34	9	0.16	18	0.26	<2	<0.07	<2	<0.02	0.41
16:37	42	0.35	<2	<0.08	74	0.49	26	0.10	1.04
16:40	<2	<0.07	<2	<0.08	17	0.22	19	0.08	0.38
16:43	41	0.35	<2	<0.08	13	0.19	23	0.09	0.72
16:46	21	0.25	<2	<0.08	<2	<0.07	32	0.11	0.46
16:49	29	0.29	<2	<0.08	7	0.14	<2	<0.02	0.43
16:52	<2	<0.07	<2	<0.08	63	0.45	8	0.05	0.55
Average		0.18		<0.08		0.22		0.05	0.56

SH

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *16*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
17:15	<2	<0.07	21	0.28	16	0.22	16	0.07	0.65
17:18	14	0.19	49	0.44	<2	<0.07	<2	<0.02	0.63
17:21	9	0.16	61	0.49	41	0.36	19	0.08	1.17
17:24	<2	<0.07	4	0.12	14	0.20	18	0.08	0.47
17:27	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
17:30	<2	<0.07	<2	<0.08	14	0.20	6	0.04	0.29
17:33	10	0.16	<2	<0.08	<2	<0.07	<2	<0.02	0.16
17:36	5	0.12	31	0.34	<2	<0.07	27	0.10	0.66
17:39	9	0.15	6	0.15	<2	<0.07	<2	<0.02	0.30
17:42	38	0.34	<2	<0.08	<2	<0.07	<2	<0.02	0.34
17:45	21	0.24	35	0.37	19	0.23	<2	<0.02	0.85
17:48	21	0.25	10	0.19	<2	<0.07	30	0.10	0.64
17:52	63	0.44	<2	<0.08	<2	<0.07	<2	<0.02	0.44
17:55	4	0.10	<2	<0.08	37	0.34	24	0.09	0.62
17:58	19	0.23	61	0.49	12	0.19	<2	<0.02	0.91
18:01	52	0.40	39	0.39	<2	<0.07	20	0.08	0.95
18:04	15	0.21	49	0.44	<2	<0.07	<2	<0.02	0.65
18:07	89	0.53	<2	<0.08	37	0.34	<2	<0.02	0.86
18:10	51	0.39	<2	<0.08	<2	<0.07	70	0.16	0.72
18:13	10	0.17	<2	<0.08	<2	<0.07	16	0.07	0.32
Average		0.20		0.18		0.10		0.04	0.58 ✓

5/4

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *✓*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
18:20	8	0.14	<2	<0.08	10	0.17	30	0.10	0.52
18:23	<2	<0.07	22	0.29	<2	<0.07	<2	<0.02	0.29
18:26	10	0.16	<2	<0.08	27	0.28	19	0.08	0.61
18:29	9	0.16	<2	<0.08	11	0.18	40	0.12	0.57
18:32	8	0.15	<2	<0.08	<2	<0.07	45	0.13	0.40
18:35	33	0.31	14	0.23	27	0.28	19	0.08	0.98
18:38	17	0.22	<2	<0.08	<2	<0.07	<2	<0.02	0.22
18:41	8	0.15	15	0.24	31	0.30	111	0.21	1.11
18:44	<2	<0.07	7	0.16	29	0.30	33	0.11	0.67
18:47	14	0.20	<2	<0.08	23	0.26	36	0.11	0.69
18:50	31	0.30	<2	<0.08	<2	<0.07	17	0.08	0.46
18:53	<2	<0.07	<2	<0.08	51	0.40	14	0.07	0.54
18:56	8	0.15	<2	<0.08	22	0.25	9	0.05	0.51
18:59	12	0.18	<2	<0.08	11	0.18	29	0.10	0.56
19:02	56	0.41	8	0.17	<2	<0.07	<2	<0.02	0.58
19:05	68	0.46	13	0.22	4	0.10	<2	<0.02	0.78
19:08	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
19:11	97	0.55	<2	<0.08	<2	<0.07	72	0.17	0.89
19:14	42	0.35	<2	<0.08	20	0.24	<2	<0.02	0.59
19:17	14	0.20	13	0.22	6	0.12	<2	<0.02	0.54
Average		0.20		<0.08		0.15		0.07	0.5755 ✓

SS

RUN DATA

Number 14

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *16*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
Calibration drift check									
20:16	14345	7.84	<2	<0.08	<2	<0.07	<2	<0.02	7.84
20:19	14713	7.94	<2	<0.08	<2	<0.07	<2	<0.02	7.94
20:22	14122	7.77	<2	<0.08	<2	<0.07	<2	<0.02	7.77
Average		7.85		<0.08		<0.07		<0.02	7.85 ✓

SD

RECOVERY DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** ✓

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

After Run 10 Before Run 11
Start Time 15:41 End Time 15:52

Recovery Gas to Probe, Time 15:41

Peak Areas, mv-sec			Average	ppm
13485	14713	15050	14416	7.86

Recovery Gas to GC, Time 15:48

Peak Areas, mv-sec			Average	ppm
15015	14984	15595	15198	8.08

Recovery 97.2% ✓

dx

RECOVERY DATA

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** ✓

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

After Run 13 Before Run 14
Start Time 19:19 End Time 19:29

Recovery Gas to Probe, Time 19:19

Peak Areas, mv-sec			Average	ppm
13784	14634	14808	14409	7.85

Recovery Gas to GC, Time 19:26

Peak Areas, mv-sec			Average	ppm
14826	14809	15121	14918	8.00

Recovery 98.2% ✓

5/4

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent #4**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1	Flow = 42.9 mL/Min	10.7 ppm	10.7 ppm	6.95 ppm	5.41 ppm
	Time: 06:02	Peak Areas, mv-sec			
		25099	20594	10407	44232
		24750	21533	10445	46016
		25597	21979	10703	45950
	Average Area	25149	21369	10519 ✓	45399

2	Flow = 82.8 mL/Min	5.56 ppm	5.52 ppm	3.60 ppm	2.80 ppm
	Time: 06:53	Peak Areas, mv-sec			
		7926	6406	2923	14068
		7950	6306	2884	13591
		8444	6460	2990	14698
	Average Area	8107	6390 ✓	2932	14119

3	Flow = 130 mL/Min	3.54 ppm	3.52 ppm	2.29 ppm	1.79 ppm
	Time: 07:08	Peak Areas, mv-sec			
		3069	2599	1371	5786
		3064	2578	1331	5729
		3088	2512	1340	5842
	Average Area	3074 ✓	2563	1347	5786

S/H

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *76*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

H₂S	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.56	3.54			
Area, mv-sec	25149	8107	3074			
Calc. Conc., ppm	10.6	5.79	3.46			
% Error	-1.6	4.2	-2.4 ✓			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8847	2.4717	0.9980	2	0.07	
MeSH	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.52	3.52			
Area, mv-sec	21369	6390	2563			
Calc. Conc., ppm	10.6	5.62	3.48			
% Error	-0.7	1.8	-1.1 ✓			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9089	2.3742	0.9996	2	0.08	
DMS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	6.95	3.60	2.29			
Area, mv-sec	10519	2932	1347			
Calc. Conc., ppm	7.00	3.53	2.32			
% Error	0.8	-2.0	1.2 ✓			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8617	2.4483	0.9995	2	0.07	
DMDS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	5.41	2.80	1.79			
Area, mv-sec	45399	14119	5786			
Calc. Conc., ppm	5.37	2.86	1.77			
% Error	-0.8	2.0	-1.2 ✓			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8537	3.3043	0.9995	2	0.02	

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *16*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
<hr/>				
1 Flow = 43.6 mL/Min	10.5 ppm	10.5 ppm	6.82 ppm	5.31 ppm
Time: 19:32	Peak Areas, mv-sec			
	23668	22380	10086	46114
	24884	23771	10653	47622
	24624	24375	10810	50274
Average Area	24392 ✓	23509	10516	48003
<hr/>				
2 Flow = 65.8 mL/Min	6.99 ppm	6.95 ppm	4.53 ppm	3.53 ppm
Time: 19:43	Peak Areas, mv-sec			
	14069	11744	5164	24545
	13746	12537	5293	24899
	13905	12112	5280	24958
Average Area	13907	12131 ✓	5246	24800
<hr/>				
3 Flow = 123 mL/Min	3.74 ppm	3.71 ppm	2.42 ppm	1.88 ppm
Time: 19:59	Peak Areas, mv-sec			
	4288	3691	1547	7409
	4623	3823	1561	7662
	4672	3745	1545	7541
Average Area	4527	3753	1551 ✓	7538

5x

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 1** *6*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

H ₂ S	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	10.5	6.99	3.74			
Area, mv-sec	24392	13907	4527			
Calc. Conc., ppm	10.3	7.29	3.68			
% Error	-2.5	4.3	-1.6			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.6380	2.7299	0.9976	2	0.03	
MeSH	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	10.5	6.95	3.71			
Area, mv-sec	23509	12131	3753			
Calc. Conc., ppm	10.3	7.11	3.68			
% Error	-1.4	2.4	-0.9			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7779	2.5690	0.9992	2	0.05	
DMS	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	6.82	4.53	2.42			
Area, mv-sec	10516	5246	1551			
Calc. Conc., ppm	6.73	4.63	2.40			
% Error	-1.3	2.2	-0.9			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8539	2.4865	0.9993	2	0.07	
DMDS	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	5.31	3.53	1.88			
Area, mv-sec	48003	24800	7538			
Calc. Conc., ppm	5.23	3.62	1.86			
% Error	-1.6	2.7	-1.0			
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7949	3.3916	0.9990	2	0.02	

SK

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *16*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 ✓	901 ✓	758 ✓	895 ✓
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70) \\ = 460 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *AC*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun,2021**

File: E:\6-25-21.trs
Program Version: 2.0, built 21 Feb 2015 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases			Temperatures, °C	Columns
Press.	Flow			
psi	mL/min			
H ₂	30	50	Column: 100	Primary: 3'
Air	30	60	Detector: 120	Secondary:
Carrier	50	30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 6 Run 1				
17:56:59	6779	20.2	34	0.2
17:57:14	6779	20.2	35	0.2
17:57:29	6780	20.2	34	0.2
17:57:44	6781	20.2	34	0.2
17:57:59	6779	20.2	35	0.2
17:58:14	6781	20.2	35	0.2
17:58:29	6781	20.2	34	0.2
17:58:44	6778	20.2	35	0.2
17:58:59	6780	20.2	34	0.2
17:59:14	6780	20.2	36	0.2
17:59:29	6780	20.2	34	0.2
17:59:44	6779	20.2	36	0.2
17:59:59	6779	20.2	37	0.2
18:00:14	6780	20.2	36	0.2
18:00:29	6779	20.2	37	0.2
18:00:44	6781	20.2	37	0.2
18:00:59	6780	20.2	38	0.2
18:01:14	6779	20.2	37	0.2
18:01:29	6781	20.2	37	0.2
18:01:44	6779	20.2	37	0.2
18:01:59	6778	20.2	36	0.2
18:02:14	6779	20.2	38	0.2
18:02:29	6774	20.2	41	0.2
18:02:44	6772	20.2	41	0.2
18:02:59	6771	20.2	41	0.2
Avg	6779	20.2	36	0.2

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 6 Run 2				
18:28:22	6777	20.2	34	0.2
18:28:37	6778	20.2	35	0.2
18:28:52	6775	20.2	33	0.2
18:29:07	6778	20.2	33	0.2
18:29:22	6778	20.2	35	0.2
18:29:37	6779	20.2	35	0.2
18:29:52	6778	20.2	34	0.2
18:30:07	6777	20.2	32	0.2
18:30:22	6779	20.2	34	0.2
18:30:37	6778	20.2	35	0.2
18:30:52	6778	20.2	34	0.2
18:31:07	6778	20.2	33	0.2
18:31:22	6779	20.2	34	0.2
18:31:37	6778	20.2	34	0.2
Avg	6778	20.2	34	0.2

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
PM vent 6 Run 3				
19:27:17	6777	20.2	34	0.2
19:27:32	6777	20.2	37	0.2
19:27:47	6777	20.2	34	0.2
19:28:02	6778	20.2	34	0.2
19:28:17	6777	20.2	34	0.2
19:28:32	6777	20.2	36	0.2
19:28:47	6778	20.2	36	0.2
19:29:02	6779	20.2	37	0.2
19:29:17	6777	20.2	38	0.2
19:29:32	6777	20.2	37	0.2
19:29:47	6777	20.2	37	0.2
19:30:02	6777	20.2	35	0.2
19:30:17	6777	20.2	36	0.2
19:30:32	6779	20.2	34	0.2
19:30:47	6778	20.2	33	0.2
Avg	6777	20.2	35	0.2

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
19:44:04	3363	10.1	3207	9.8
19:44:19	3314	9.9	3241	9.9
19:44:34	3314	9.9	3247	9.9
SG9168283BAL 10.12 - O2 10.16 - CO2				
19:44:49	3313	9.9	3246	9.9
19:45:04	3311	9.9	3247	9.9
19:45:19	3312	9.9	3250	9.9
19:45:34	3312	9.9	3248	9.9
19:45:49	3311	9.9	3249	9.9
19:46:04	3311	9.9	3249	9.9
19:46:19	3312	9.9	3251	9.9
19:46:34	3311	9.9	3251	9.9
19:46:49	3311	9.9	3250	9.9
19:47:04	3310	9.9	3248	9.9
19:47:19	3311	9.9	3248	9.9
Avg	3315	9.9	3245	9.9

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:20

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	8
10.1 ✓	SG9168283BAL	3287
19.5 ✓	CC454190	6576

Curve Coefficients

Slope	Intercept	Corr. Coeff.
336.7 ✓	-31 ✓	0.9998 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	5
10.2 ✓	SG9168283BAL	3276
20.4 ✓	CC454190	6722

Curve Coefficients

Slope	Intercept	Corr. Coeff.
329.3 ✓	-20 ✓	0.9999 ✓

Handwritten signature

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:20

O₂

Method: EPA 3A
Span Conc. 19.5 %

Slope 336.7 Intercept -31.5

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	8	0.1	0.1	0.5 ✓	Pass
10.1	3287	9.9	-0.2	-1.0 ✓	Pass
19.5	6576	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.4 %

Slope 329.3 Intercept -19.9

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	5	0.1	0.1	0.5 ✓	Pass
10.2	3276	10.0	-0.2	-1.0 ✓	Pass
20.4	6722	20.5	0.1	0.5 ✓	Pass

✓

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 6**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-25-21c.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 7

New Indy
Catawba, SC

15730.001.008
No. 7 Hood Exhaust
Paper Machine Vent 7

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/26/21 ✓	6/26/21 ✓	6/26/21 ✓	---
Time Began	945 ✓	1050 ✓	1155 ✓	---
Time Ended	1046 ✓	1150 ✓	1255 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	6.40E+04 ✓	6.42E+04 ✓	6.52E+04 ✓	6.45E+04
BWS	0.261 ✓	0.242 ✓	0.254 ✓	0.252
% Oxygen	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Recovery, %	93.9 ✓	93.9 ✓	93.9 ✓	93.9
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	0.48 ✓	0.50 ✓	0.59 ✓	0.52
Emission Rate, lb/hr	0.16	0.17	0.20	0.18
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.10 ✓	0.09 ✓	0.16 ✓	0.12
Concentration, ppm (Corrected for Recovery)	0.11	0.10	0.17	0.12
Emission Rate, lb/hr	0.04	0.03	0.06	0.04

AM ✓

New Indy
Catawba, SC

15730.001.008
No. 7 Hood Exhaust

Paper Machine Vent 7

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/26/21 ✓	6/26/21 ✓	6/26/21 ✓	---
Time Began	945 ✓	1050 ✓	1155 ✓	---
Time Ended	1037 ✓	1145 ✓	1249 ✓	---

INPUT DATA

Sampling Time, min	(Theta)	48.0 ✓	48 ✓	48 ✓	48
Stack Diameter, in.	(Dia.)	66 ✓	66 ✓	66 ✓	66
Barometric Pressure, in. Hg	(Pb)	29.68 ✓	29.68 ✓	29.68 ✓	29.68
Static Pressure, in. H2O	(Pg)	-0.30 ✓	-0.30 ✓	-0.30 ✓	-0.30
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.0030 ✓	1.0030 ✓	1.0030 ✓	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 ✓	1.8000 ✓	1.8000 ✓	1.8000
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	30.393 ✓	30.677 ✓	30.480 ✓	30.517
Meter Temperature, °F	(Tm)	79.3 ✓	86.1 ✓	92.1 ✓	85.8
Meter Temperature, °R	(Tm-R)	539.3 ✓	546.1 ✓	552.1 ✓	545.8
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2})avg	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	223.0 ✓	201.0 ✓	210.4 ✓	211.5
CO2 Concentration, %	(CO2)	0.2 ✓	0.1 ✓	0.2 ✓	0.2
O2 Concentration, %	(O2)	20.2 ✓	20.2 ✓	20.2 ✓	20.2
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2})avg	1.144 ✓	1.122 ✓	1.157 ✓	1.141
Stack Temperature, °F	(Ts)	187.7 ✓	188.2 ✓	189.9 ✓	188.6
Stack Temperature, °R	(Ts-R)	647.7 ✓	648.2 ✓	649.9 ✓	648.6
Moisture Fraction (at Saturation)	(BWS)	0.610 ✓	0.617 ✓	0.640 ✓	0.622

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	23.76	23.76	23.76	23.76
Stack Pressure, in. Hg	(Ps)	29.66	29.66	29.66	29.66
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft ³	(Vmstd)	29.690	29.594	29.084	29.456
Standard Water Volume, ft ³	(Vwstd)	10.497	9.461	9.904	9.954
Moisture Fraction (Measured)	(BWS)	0.261	0.242	0.254	0.252
Moisture Fraction (lower sat/meas)	(BWS)	0.261	0.242	0.254	0.252
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.82	28.84	28.83
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.01	26.20	26.09	26.10
Average Stack Gas Velocity, ft/sec	(Vs)	75.29	73.59	76.12	75.00
Stack Gas Flow, actual, ft ³ /min	(Qa)	107321	104899	108506	106908
Stack Gas Flow, Std, ft ³ /min	(Qs)	64044	64155	65159	64452
Calibration check	(Yqa)	1.0230	1.0202	1.0322	1.025
Percent difference from Y					2.21%

AB for SH ✓

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 7 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/16/21
 Test Personnel BFA/B4
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR66-6'
 Liner Material SS
 Pitot ID/Coeff. 0.77
 Thermo ID A023
 Nozzle ID/Diams. 0.250 in.
 Avg. Nozzle Diam. 0.250 in.

Ambient Temp. 73 °F
 Baro. Pressure 29.68 in. Hg
 Static Pressure 0.30 in. H₂O
 Impinger Gain 214.7 mL
 Silica Gel Gain 8.1 g
 Stack Area 23.76 ft²
 Total Traverse Points 16

K Factor N/A

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	0.001	0.000
Pitot	12"	5"
	Good	Good

Filter ID N/A
 Sample ID Run 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	09:45	1.2	1.3	8.360	190	N/A	76	246	252	N/A	61	3	
2	3		1.2	1.3	10.5	190		77	245	251		51	3	
3	6		1.3	1.3	12.2	190		77	244	254		51	3	
4	9		1.3	1.3	14.0	189		78	245	250		51	3	
5	12		1.3	1.3	15.9	189		78	248	253		51	3	
6	15		1.1	1.3	17.7	189		79	244	252		53	3	
7	18		1.1	1.3	19.6	188		79	242	254		54	3	
8	21		1.3	1.3	21.5	188		79	243	255		55	3	
B-1	24		1.2	1.3	23.4	186		79	242	252		59	3	
2	27		1.5	1.3	25.3	187		80	247	252		58	3	
3	30		1.5	1.3	27.2	187		80	245	255		60	3	
4	33		1.4	1.3	29.2	187		80	245	252		62	3	
5	36		1.5	1.3	31.1	187		81	247	254		62	3	
6	39		1.5	1.3	33.0	187		81	245	255		64	3	
7	42		1.4	1.3	34.9	187		82	243	254		64	3	
8	45		1.3	1.3	36.8	187		82	246	256		66	3	
8	48	10:37	1.2	1.3	38.743	182		82	246	256		66	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m	O ₂ /CO ₂	by Orsat	Fyrite M3A	Min/Max	Max Temp	Max Vac	V _{m-std} scf
			1.144	1.300	30.393	187.7	79.3	242/248	250/256					



Integrated Air Services

Comments

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 6.2
 Moisture, %

Thermocouple Check
 Meter Temp., °F 192 % Isokinetic
 Ref. Temp., °F 191.6 Calculated by
 Result 95% QC by

15730.001.008
 Pulp Dryer, #8 Paper Machine,
 #2-3 Sulfate, #1-2 CBBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 7 Hood Exhaust
 Sample Location Road
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/26/21
 Test Personnel BGA/BCE
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PR6C-6'
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A023
 Nozzle ID/Diams. 2.50 in.
 Avg. Nozzle Diam. 2.50 in.

Ambient Temp. 75 °F
 Baro. Pressure* 29.68 in. Hg
 Static Pressure 30 in. H₂O
 Impinger Gain 125.0 mL
 Silica Gel Gain 6.9 g
 Stack Area 23.76 ft²
 Total Traverse Points 16

K Factor N/A
 Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>0.004</u>	<u>0.000</u>
Pitot	<u>12"</u>	<u>5"</u>
	<u>Good</u>	<u>Good</u>

Filter ID N/A
 Sample ID Run 2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	10:50	1.1	1.3	39.009	188	N/A	82	247	253	N/A	67	2	
2	3		1.1	1.3	40.9	188		83	246	253		62	2	
3	6		1.1	1.3	42.8	188		83	247	253		57	2	
4	9		1.1	1.3	44.7	188		86	245	253		56	2	
5	12		1.1	1.3	46.7	189		85	243	252		56	2	
6	15		1.1	1.3	48.6	188		85	242	251		56	2	
7	18		1.3	1.3	50.5	188		86	242	252		54	2	
8	21		1.2	1.3	52.4	189		86	243	252		55	2	
B-1	24		1.3	1.3	54.4	188		88	244	253		61	2	
2	27		1.5	1.3	56.3	187		87	247	253		56	2	
3	30		1.4	1.3	58.2	188		87	248	253		55	2	
4	33		1.5	1.3	60.1	188		86	245	252		56	2	
5	36		1.4	1.3	62.0	188		88	247	251		58	2	
6	39		1.3	1.3	63.9	188		87	244	253		56	2	
7	42		1.2	1.3	65.8	189		89	246	253		57	2	
8	45		1.3	1.3	67.7	189		87	243	253		58	2	
8	48	11:45	1.3	1.3	69.6	188		87	243	253		58	2	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m	O ₂ /CO ₂	by Orsat	Fyrite	M3A	Thermocouple Check	Q _s dscfm	
			1.120	1.300	30.677	186.2	86.1	242/248	251/255			67	2	
			1.2625	1.1902										



Integrated Air Services

Comments

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 0.1
 Moisture, %

Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

QC by QC

15730.001.008
 Pulp Dryer, #9 Paper Machine,
 #2-3 SOTVs & #1-2 CBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A023	Ambient Temp.	79 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.603	Baro. Pressure*	29.68 in. Hg
Source	No. 7 Hood Exhaust	Console ΔH@	1.800	Static Pressure	-30 in. H ₂ O
Sample Location	15730.001.008	Probe ID/Length	PR6C-6'	Impinger Gain	202.2 mL
W. O. Number	3	Liner Material	55	Silica Gel Gain	8.2 g
Run Number		Pitot ID/Coeff.	277		
Date	6/14/21	Thermo ID	A023	Stack Area	23.76 ft ²
Test Personnel	BEA7 BE	Nozzle ID/Diams.			
Sample Time	48 min.	Avg. Nozzle Diam.	.250 in.	Total Traverse Points	16

K Factor	N/A
----------	-----

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	0.000	0.000
Pitot	12"	5"
	Good	Good

Filter ID N/A
Sample ID Rn3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DCGM INLET TEMP (°F)	DCGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	11:55	1.1	1.3	71.9	189	N/A	91	245	252	N/A	67	3	
2	3		1.2	1.3	73.8	191		91	245	251		58	3	
3	6		1.2	1.3	75.7	191		91	247	250		56	3	
4	9		1.3	1.3	77.6	192		92	244	253		56	3	
5	12		1.1	1.3	77.5	190		92	243	252		56	3	
6	15		1.1	1.3	81.4	190		94	243	252		57	3	
7	18		1.4	1.3	83.2	190		93	241	253		57	3	
8	21		1.4	1.3	85.1	191		92	241	253		58	3	
B-1	24		1.6	1.3	87.1	187		92	241	256		57	3	
2	27		1.5	1.3	89.0	190		92	246	252		62	3	
3	30		1.6	1.3	91.0	190		93	242	252		62	3	
4	33		1.5	1.3	93.0	191		93	245	252		64	3	
5	36		1.5	1.3	94.8	191		92	247	253		66	3	
6	39		1.5	1.3	96.7	190		92	240	251		67	3	
7	42		1.4	1.3	98.6	191		91	243	251		66	3	
8	45		1.1	1.3	100.559	185		92	245	251		66	3	
8	48	12:49	1.1	1.3	100.559	185		92	245	251		66	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _m	Avg T _i	Avg T _o	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-sd} , scf
			1.1565	1.306	30.48	185.5	92.1	92.1	246/247	250/251	250/251	67	3	



Integrated Air Services

Comments

1.2438

1.1902

20.2

0.2

250/251

67

3

15730.001.008
Pulp Dryer, #1 Paper Machine,
#2-3 Sulfite & #1-2 CBs
Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 7 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID Filter ID N/A Analyst BEA/DE

Contents	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Final	928.4	700.8	562.9		916.6	
Initial	774.4	669.3	538.5		908.5	
Gain	154 ✓	36.5 ✓	24.4 ✓	214.9	8.1 ✓	223 ✓

Impinger Color Clear Labeled? ☒
Silica Gel Condition Good Sealed? ☒

Run No. 2 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Final	900.8	808.5	640.8		879.4	
Initial	734.5	783.2	637.4		873.4	
Gain	166.3 ✓	29.3 ✓	3.4 ✓	195 ✓	6 ✓	201 ✓

Impinger Color Clear Labeled? ☒
Silica Gel Condition Good Sealed? ☒

Run No. 3 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Final	931.4	727.2	569.3		924.8	
Initial	780.9	681.7	562.9		916.6	
Gain	150.5 ✓	45.3 ✓	6.4 ✓	202.2 ✓	8.2 ✓	210.4 ✓

Impinger Color Clear Labeled? ☒
Silica Gel Condition Good Sealed? ☒

Check COC for Sample IDs of Media Blanks

rw

WESTON
SOLUTIONS®
Integrated Air Service

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
 Pulp Dryer, #3 Paper Machine,
 #2-3 SDTVs, & #1-2 CBs
 Emission Report

Client New Indy
 Location/Plant Catawba, SC
 Source No. 7 Hood Exhaust

Operator VD / LF
 Date 15-Jun-21
 W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	66.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	66
Area of Duct (ft ²)	23.76
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	7	7
3	19.4	13	13
4	32.3	21 1/2	21 1/2
5	67.7	44 1/2	45
6	80.6	53	53 1/2
7	89.5	59	59
8	96.8	64	64
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

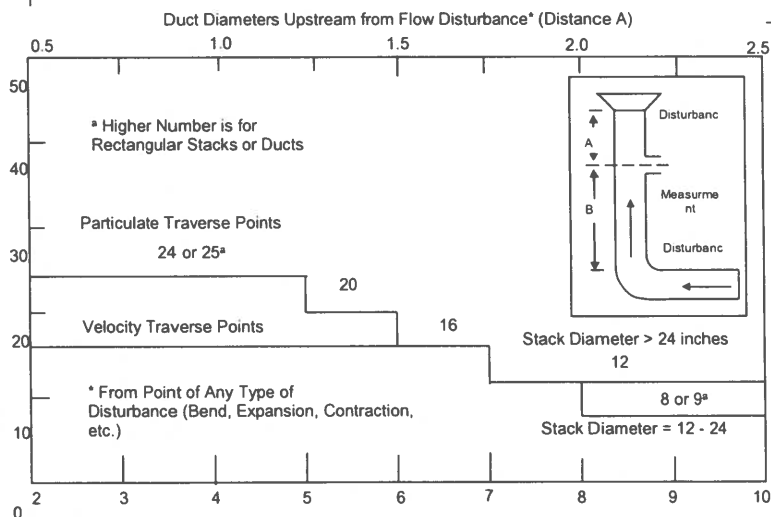
Traverse Point Location Percent of Stack -Circular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3				75		29.6		19.4		14.6		11.8
	4				93.3		70.4		32.3		22.6		17.7
	5						85.4		67.7		34.2		25
	6						95.6		80.6		65.8		35.6
	7								89.5		77.4		64.4
	8								96.8		85.4		75
	9										91.8		82.3
	10										97.4		88.2
	11												93.3
	12												97.9

Flow Disturbances

Upstream - A (ft)	5.625
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.02
Downstream - B (duct diameters)	4.55

Diagram of Stack



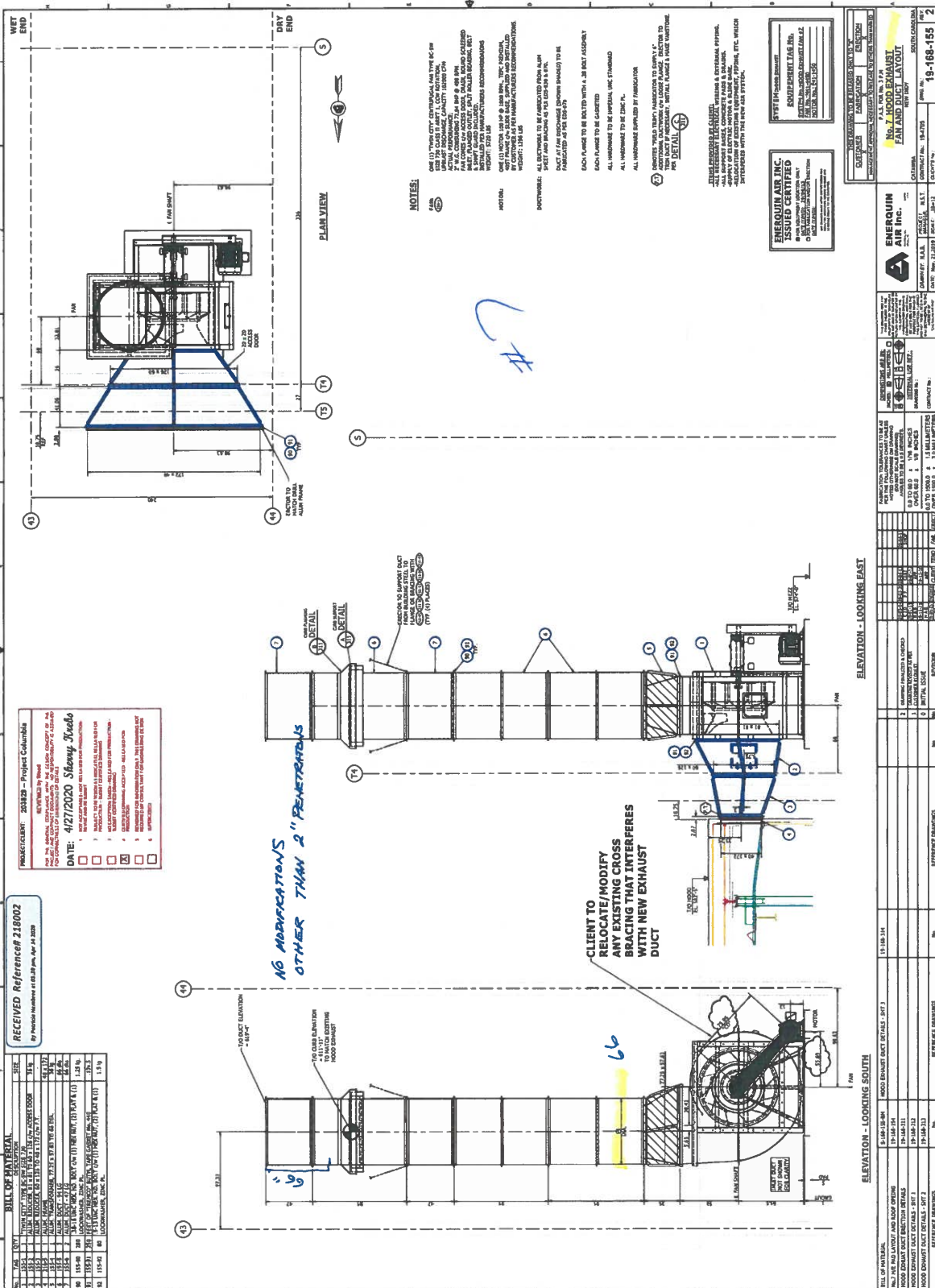
Traverse Point Location Percent of Stack -Rectangular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
	6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7							92.9	81.3	72.2	65.0	59.1	54.2
	8								93.8	83.3	75.0	68.2	62.5
	9									94.4	85.0	77.3	70.8
	10										95.0	86.4	79.2
	11											95.5	87.5
	12												95.8

Rectangular Stack Points & Matrix
 9 - 3 x 3
 12 - 4 x 3
 16 - 4 x 4
 20 - 5 x 4
 25 - 5 x 5
 30 - 6 x 5
 36 - 6 x 6
 42 - 7 x 6
 49 - 7 x 7

Port Diam. (in) = 4
 Number of Ports = 2

Tape Measure I.D. # TM-01



RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 09:45 End Time 10:46

Average Measured TRS Conc.

~~0.42~~ 0.45
0.39 ppm

Recovery No. 2

93.9 %

TRS Corrected for Recovery

0.42 ppm

AB
9/29 ✓

~~0.45~~
0.48

AB
9/15 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 10:50 End Time 11:50

Average Measured TRS Conc.

~~0.44~~ 0.47
0.40 ppm

Recovery No. 2

93.9 %

TRS Corrected for Recovery

~~0.43~~ ppm

0.47 0.50

AB
9/15✓

AB
9/22✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 11:55 End Time 12:55

Average Measured TRS Conc.

~~0.52~~ 0.55
0.49 ppm

Recovery No. 2

93.9 %

TRS Corrected for Recovery

0.52 ppm

~~0.55~~ 0.59

AB
9/15 ✓

AB
9/29 ✓

RUN DATA

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
09:45	17	0.11		<2		0.054	15	0.14		16	0.04		0.39	
09:48	26	0.14		6	0.08		10	0.11		<2		0.017	0.37	
09:51	27	0.14		8	0.09		39	0.24		5	0.02		0.53	
09:54	9	0.07		6	0.08		39	0.25		<2		0.017	0.43	
09:57	26	0.14		7	0.09		<2		0.054	<2		0.017	0.32	
10:00	29	0.15		12	0.12		52	0.29		27	0.06		0.68	
10:03	<2		0.037	<2		0.054	43	0.26		117	0.14		0.64	
10:06	32	0.16		<2		0.054	32	0.22		10	0.03		0.50	
10:09	<2		0.037	<2		0.054	54	0.29		<2		0.017	0.42	
10:12	36	0.17		14	0.13		21	0.17		<2		0.017	0.51	
10:15	70	0.26		<2		0.054	21	0.17		45	0.08		0.64	
10:18	5	0.05		<2		0.054	<2		0.054	34	0.07		0.30	
10:22	<2		0.037	<2		0.054	<2		0.054	32	0.07		0.28	
10:25	<2		0.037	<2		0.054	64	0.33		<2		0.017	0.45	
10:28	7	0.07		<2		0.054	43	0.26		42	0.08		0.54	
10:31	4	0.05		33	0.22		<2		0.054	<2		0.017	0.35	
10:34	<2		0.037	18	0.15		22	0.17		<2		0.017	0.40	
10:37	22	0.13		8	0.10		24	0.19		<2		0.017	0.45	
10:40	24	0.14		17	0.15		16	0.15		5	0.02		0.48	
10:43	<2		0.037	13	0.13		12	0.12		26	0.06		0.41	
Averages			0.10										0.45	

RUN DATA

Number 2

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
10:50	34	0.17		41	0.25		38	0.24		21	0.05		0.76
10:53	13	0.09		<2		0.054	<2		0.054	<2		0.017	0.23
10:56	8	0.07		15	0.14		15	0.14		25	0.06		0.46
10:59	<2		0.037	<2		0.054	30	0.21		<2		0.017	0.34
11:02	48	0.21		41	0.25		9	0.10		<2		0.017	0.59
11:05	<2		0.037	<2		0.054	18	0.16		92	0.12		0.50
11:08	9	0.08		21	0.17		46	0.27		<2		0.017	0.54
11:11	5	0.05		7	0.09		<2		0.054	41	0.08		0.36
11:14	41	0.19		33	0.22		<2		0.054	29	0.06		0.58
11:17	<2		0.037	<2		0.054	17	0.15		55	0.09		0.42
11:20	<2		0.037	<2		0.054	33	0.22		<2		0.017	0.35
11:23	23	0.13		<2		0.054	<2		0.054	10	0.03		0.31
11:26	<2		0.037	16	0.14		24	0.18		27	0.06		0.49
11:29	5	0.05		<2		0.054	<2		0.054	7	0.03		0.22
11:32	57	0.23		10	0.11		30	0.21		17	0.05		0.64
11:35	<2		0.037	92	0.39		<2		0.054	<2		0.017	0.52
11:38	11	0.09		<2		0.054	<2		0.054	26	0.06		0.31
11:41	<2		0.037	33	0.22		28	0.20		13	0.04		0.53
11:44	13	0.09		23	0.18		90	0.40		38	0.07		0.81
11:47	20	0.12		<2		0.054	25	0.19		18	0.05		0.46
Averages													0.47

RUN DATA

Number 3

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
11:55	<2		0.037	0.04	0.26		<2		0.054	<2		0.017	0.38
11:58	42	0.19		0.19	0.07		17	0.15		21	0.05		0.52
12:01	14	0.10		0.10	0.22		<2		0.054	<2		0.017	0.41
12:04	68	0.25		0.25		0.054	7	0.09		16	0.04		0.49
12:07	57	0.23		0.23	0.22		19	0.16		<2		0.017	0.64
12:10	<2		0.037	0.04	0.15		72	0.35		<2		0.017	0.57
12:13	18	0.11		0.11		0.054	18	0.16		<2		0.017	0.36
12:16	68	0.25		0.25		0.054	191	0.61		<2		0.017	0.95
12:19	40	0.18		0.18		0.054	11	0.12		22	0.05		0.47
12:22	16	0.11		0.11	0.11		16	0.15		<2		0.017	0.40
12:25	<2		0.037	0.04	0.16		<2		0.054	<2		0.017	0.28
12:28	23	0.13		0.13	0.37		26	0.19		<2		0.017	0.73
12:31	76	0.27		0.27		0.054	69	0.34		<2		0.017	0.70
12:34	12	0.09		0.09	0.16		15	0.14		26	0.06		0.51
12:37	46	0.20		0.20	0.22		72	0.35		12	0.04		0.84
12:40	62	0.24		0.24	0.31		26	0.19		9	0.03		0.81
12:43	<2		0.037	0.04		0.054	12	0.12		13	0.04		0.29
12:46	87	0.30		0.30	0.20		<2		0.054	39	0.07		0.70
12:49	53	0.22		0.22	0.07		<2		0.054	<2		0.017	0.37
12:52	10	0.08		0.08	0.28		12	0.12		11	0.04		0.55
Averages				0.16									0.55

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
09:45	17	0.11	<2	<0.05	15	0.14	16	0.04	0.34
09:48	26	0.14	6	0.08	10	0.11	<2	<0.02	0.34
09:51	27	0.14	8	0.09	39	0.24	5	0.02	0.53
09:54	9	0.07	6	0.08	39	0.25	<2	<0.02	0.40
09:57	26	0.14	7	0.09	<2	<0.05	<2	<0.02	0.23
10:00	29	0.15	12	0.12	52	0.29	27	0.06	0.68
10:03	<2	<0.04	<2	<0.05	43	0.26	117	0.14	0.55
10:06	32	0.16	<2	<0.05	32	0.22	10	0.03	0.45
10:09	<2	<0.04	<2	<0.05	54	0.29	<2	<0.02	0.29
10:12	36	0.17	14	0.13	21	0.17	<2	<0.02	0.47
10:15	70	0.26	<2	<0.05	21	0.17	45	0.08	0.59
10:18	5	0.05	<2	<0.05	<2	<0.05	34	0.07	0.19
10:22	<2	<0.04	<2	<0.05	<2	<0.05	32	0.07	0.13
10:25	<2	<0.04	<2	<0.05	64	0.33	<2	<0.02	0.33
10:28	7	0.07	<2	<0.05	43	0.26	42	0.08	0.48
10:31	4	0.05	33	0.22	<2	<0.05	<2	<0.02	0.26
10:34	<2	<0.04	18	0.15	22	0.17	<2	<0.02	0.33
10:37	22	0.13	8	0.10	24	0.19	<2	<0.02	0.41
10:40	24	0.14	17	0.15	16	0.15	5	0.02	0.48
10:43	<2	<0.04	13	0.13	12	0.12	26	0.06	0.37
Average		0.09		0.07		0.17		0.03	0.39

54

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
10:50	34	0.17	41	0.25	38	0.24	21	0.05	0.76
10:53	13	0.09	<2	<0.05	<2	<0.05	<2	<0.02	0.09
10:56	8	0.07	15	0.14	15	0.14	25	0.06	0.46
10:59	<2	<0.04	<2	<0.05	30	0.21	<2	<0.02	0.21
11:02	48	0.21	41	0.25	9	0.10	<2	<0.02	0.55
11:05	<2	<0.04	<2	<0.05	18	0.16	92	0.12	0.41
11:08	9	0.08	21	0.17	46	0.27	<2	<0.02	0.51
11:11	5	0.05	7	0.09	<2	<0.05	41	0.08	0.30
11:14	41	0.19	33	0.22	<2	<0.05	29	0.06	0.53
11:17	<2	<0.04	<2	<0.05	17	0.15	55	0.09	0.33
11:20	<2	<0.04	<2	<0.05	33	0.22	<2	<0.02	0.22
11:23	23	0.13	<2	<0.05	<2	<0.05	10	0.03	0.20
11:26	<2	<0.04	16	0.14	24	0.18	27	0.06	0.45
11:29	5	0.05	<2	<0.05	<2	<0.05	7	0.03	0.11
11:32	57	0.23	10	0.11	30	0.21	17	0.05	0.64
11:35	<2	<0.04	92	0.39	<2	<0.05	<2	<0.02	0.39
11:38	11	0.09	<2	<0.05	<2	<0.05	26	0.06	0.20
11:41	<2	<0.04	33	0.22	28	0.20	13	0.04	0.49
11:44	13	0.09	23	0.18	90	0.40	38	0.07	0.81
11:47	20	0.12	<2	<0.05	25	0.19	18	0.05	0.40
Average		0.08		0.11		0.13		0.04	0.40 ✓

sty

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**

Operator: **VD**

Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
11:55	<2	<0.04	44	0.26	<2	<0.05	<2	<0.02	0.26
11:58	42	0.19	5	0.07	17	0.15	21	0.05	0.52
12:01	14	0.10	34	0.22	<2	<0.05	<2	<0.02	0.32
12:04	68	0.25	<2	<0.05	7	0.09	16	0.04	0.43
12:07	57	0.23	33	0.22	19	0.16	<2	<0.02	0.61
12:10	<2	<0.04	18	0.15	72	0.35	<2	<0.02	0.50
12:13	18	0.11	<2	<0.05	18	0.16	<2	<0.02	0.27
12:16	68	0.25	<2	<0.05	191	0.61	<2	<0.02	0.86
12:19	40	0.18	<2	<0.05	11	0.12	22	0.05	0.41
12:22	16	0.11	10	0.11	16	0.15	<2	<0.02	0.36
12:25	<2	<0.04	19	0.16	<2	<0.05	<2	<0.02	0.16
12:28	23	0.13	83	0.37	26	0.19	<2	<0.02	0.69
12:31	76	0.27	<2	<0.05	69	0.34	<2	<0.02	0.61
12:34	12	0.09	20	0.16	15	0.14	26	0.06	0.51
12:37	46	0.20	33	0.22	72	0.35	12	0.04	0.84
12:40	62	0.24	62	0.31	26	0.19	9	0.03	0.81
12:43	<2	<0.04	<2	<0.05	12	0.12	13	0.04	0.20
12:46	87	0.30	28	0.20	<2	<0.05	39	0.07	0.64
12:49	53	0.22	4	0.07	<2	<0.05	<2	<0.02	0.29
12:52	10	0.08	51	0.28	12	0.12	11	0.04	0.55
Average		0.15		0.14		0.16		0.02	0.49 ✓

54

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Before Run 1

Start Time 08:19 End Time 08:31

Recovery Gas to Probe, Time 08:19

Peak Areas, mv-sec			Average	ppm
15757	15082	15526	15455	6.94

Recovery Gas to GC, Time 08:27

Peak Areas, mv-sec			Average	ppm
17789	17071	17094	17318	7.43

Recovery 93.3% ✓

5/4

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

After Run 3 Before Run 4
Start Time 12:55 End Time 13:09

Recovery Gas to Probe, Time 12:55

Peak Areas, mv-sec			Average	ppm
16925	16900	17033	16953	7.34

Recovery Gas to GC, Time 13:06

Peak Areas, mv-sec			Average	ppm
18883	18581	18955	18807	7.82

Recovery 93.9% ✓

SH

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

		Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg	
Analyte	H₂S	MeSH	DMS	DMDS	
Perm. Device ID	T-51831	33-50536	89-50725	89-53405	
Perm. Rate, nL/min	460	457	298	232	
Ret. Time, sec	25.0	35.0	63.0	132.0	
<hr/>					
1 Flow = 48.0 mL/Min	9.58 ppm	9.52 ppm	6.20 ppm	4.83 ppm	
Time: 07:01	Peak Areas, mv-sec				
	25119	23385	10987	48706	
	25616	23496	10706	47186	
	25021	22672	10690	48066	
Average Area	25252	23184 ✓	10794	47986	
<hr/>					
2 Flow = 81.6 mL/Min	5.64 ppm	5.60 ppm	3.65 ppm	2.84 ppm	
Time: 07:34	Peak Areas, mv-sec				
	11971	9531	4072	19617	
	11666	9535	4189	19344	
	11820	9242	4068	20012	
Average Area	11819	9436	4110 ✓	19658	
<hr/>					
3 Flow = 151 mL/Min	3.05 ppm	3.02 ppm	1.97 ppm	1.54 ppm	
Time: 07:49	Peak Areas, mv-sec				
	3892	3195	1507	6761	
	3898	3136	1468	6767	
	3818 ✓	3182	1462	6752	
Average Area	3869 ✓	3171	1479	6760	

sty

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

H ₂ S	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	9.58	5.64	3.05		
Area, mv-sec	25252	11819	3869		
Calc. Conc., ppm	9.36	5.89	2.98		
% Error	-2.4	4.5	-2.0 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.6414	2.8084	0.9978	2	0.04

MeSH	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	9.52	5.60	3.02		
Area, mv-sec	23184	9436	3171		
Calc. Conc., ppm	9.47	5.65	3.01		
% Error	-0.5	0.9	-0.4 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7368	2.6693	0.9999	2	0.05

DMS	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	6.20	3.65	1.97		
Area, mv-sec	10794	4110	1479		
Calc. Conc., ppm	6.26	3.59	1.99		
% Error	0.9	-1.7	0.8 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7325	2.6531	0.9997	2	0.05

DMDS	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	4.83	2.84	1.54		
Area, mv-sec	47986	19658	6760		
Calc. Conc., ppm	4.82	2.86	1.53		
% Error	-0.3	0.6	-0.3 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7107	3.5133	>0.9999	2	0.02

SN

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1	Flow = 48.0 mL/Min	9.58 ppm	9.52 ppm	6.20 ppm	4.83 ppm
	Time: 16:36	Peak Areas, mv-sec			
		26011	25303	11444	51862
		26531	26149	12036	53970
		27302	26754	12114	53372
	Average Area	26615	26069	11864 ✓	53068

2	Flow = 88.9 mL/Min	5.17 ppm	5.14 ppm	3.35 ppm	2.61 ppm
	Time: 16:50	Peak Areas, mv-sec			
		9447	7596	3066	16100
		9456	7369	3124	14977
		9570	7546	3109	14905
	Average Area	9491	7504 ✓	3100	15327

3	Flow = 133 mL/Min	3.45 ppm	3.43 ppm	2.23 ppm	1.74 ppm
	Time: 17:14	Peak Areas, mv-sec			
		4013	3384	1323	6743
		4015	3427	1344	6741
		3979	3463	1344	6769
	Average Area	4002	3425	1337 ✓	6751

SH

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

H₂S	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	9.58	5.17	3.45		
Area, mv-sec	26615	9491	4002		
Calc. Conc., ppm	9.43	5.38	3.37		
% Error	-1.6	4.1	-2.4 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8396	2.6323	0.9977	2	0.05
MeSH	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	9.52	5.14	3.43		
Area, mv-sec	26069	7504	3425		
Calc. Conc., ppm	9.54	5.10	3.44		
% Error	0.3	-0.7	0.4 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9895	2.4671	0.9999	2	0.08
DMS	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	6.20	3.35	2.23		
Area, mv-sec	11864	3100	1337		
Calc. Conc., ppm	6.22	3.32	2.24		
% Error	0.3	-0.8	0.5 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	2.1400	2.3753	0.9999	2	0.11
DMDS	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	4.83	2.61	1.74		
Area, mv-sec	53068	15327	6751		
Calc. Conc., ppm	4.83	2.61	1.74		
% Error	-0.0	0.1	-0.0 ✓		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	2.0180	3.3447	>0.9999	2	0.03

SK

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642	901	758	895
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70) \\ = 460 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

File: E:\6-26-21.tr
Program Version: 2.0, built 21 Feb 2015 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press. psi	Flow mL/min		
H ₂	30	50	Column: 100	Primary: 3'
Air	30	60	Detector: 120	Secondary:
Carrier	50	30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

RUN DATA

Number 7

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
17:44	18765	7.81	<2	<0.05	<2	<0.05	<2	<0.02	7.81
17:47	19416	7.97	<2	<0.05	<2	<0.05	<2	<0.02	7.97
17:50	18473	7.73	<2	<0.05	<2	<0.05	<2	<0.02	7.73
17:53	18357	7.70	<2	<0.05	<2	<0.05	<2	<0.02	7.70
Average		7.80		<0.05		<0.05		<0.02	7.80

SK

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 7**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
10:49:55	6772	20.2	-2	0.2
10:50:10	6774	20.2	-2	0.2
10:50:25	6773	20.2	-3	0.2
10:50:40	6772	20.2	-2	0.2
10:50:55	6773	20.2	-2	0.2
10:51:10	6773	20.2	-3	0.2
10:51:25	6774	20.2	-2	0.2
10:51:40	6771	20.2	-2	0.2
10:51:55	6771	20.2	-2	0.2
10:52:10	6774	20.2	-3	0.2
10:52:25	6773	20.2	-2	0.2
10:52:40	6772	20.2	-2	0.2
10:52:55	6773	20.2	-3	0.2
10:53:10	6774	20.2	-2	0.2
10:53:25	6774	20.2	-2	0.2
10:53:40	6773	20.2	-2	0.2
10:53:55	6774	20.2	-3	0.2
10:54:10	6773	20.2	-3	0.2
Avg	6773	20.2	-2	0.2

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 7**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
12:01:12	6774	20.2	-2	0.2
12:01:27	6773	20.2	-4	0.1
12:01:42	6773	20.2	-3	0.2
12:01:57	6772	20.2	-4	0.1
12:02:12	6773	20.2	-5	0.1
12:02:27	6772	20.2	-4	0.1
12:02:42	6773	20.2	-5	0.1
12:02:57	6772	20.2	-5	0.1
12:03:12	6772	20.2	-5	0.1
12:03:27	6772	20.2	-5	0.1
12:03:42	6772	20.2	-5	0.1
12:03:57	6772	20.2	-4	0.1
12:04:12	6772	20.2	-5	0.1
12:04:27	6773	20.2	-4	0.1
12:04:42	6773	20.2	-5	0.1
12:04:57	6771	20.2	-5	0.1
12:05:12	6772	20.2	-6	0.1
Avg	6772	20.2	-4	0.1

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 7**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
13:04:58	6768	20.2	-3	0.2
13:05:13	6768	20.2	-3	0.2
13:05:28	6767	20.2	-2	0.2
13:05:43	6768	20.2	-3	0.2
13:05:58	6768	20.2	-2	0.2
13:06:13	6768	20.2	-2	0.2
13:06:28	6768	20.2	-4	0.1
13:06:43	6768	20.2	-3	0.2
13:06:58	6769	20.2	-3	0.2
13:07:13	6768	20.2	-3	0.2
13:07:28	6769	20.2	-4	0.1
13:07:43	6770	20.2	-5	0.1
13:07:58	6767	20.2	-3	0.2
13:08:13	6767	20.2	-2	0.2
13:08:28	6769	20.2	-2	0.2
13:08:43	6768	20.2	-4	0.1
13:08:58	6768	20.2	-3	0.2
Avg	6768	20.2	-3	0.2

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 7**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time: 08:07

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	8
10.1	SG9168283BAL	3293
19.5	CC454190	6574

Curve Coefficients

Slope	Intercept	Corr. Coeff.
336.6	-29	0.9998

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-32
10.2	SG9168283BAL	3417
20.4	CC454190	7035

Curve Coefficients

Slope	Intercept	Corr. Coeff.
346.4	-56	0.9999

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 7**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time: 08:07

O₂

Method: EPA 3A

Span Conc. 19.5 %

Slope 336.6

Intercept -29.2

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	8	0.1	0.1	0.5 ✓	Pass
10.1	3293	9.9	-0.2	-1.0 ✓	Pass
19.5	6574	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.4 %

Slope 346.4

Intercept -55.6

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-32	0.1	0.1	0.5 ✓	Pass
10.2	3417	10.0	-0.2	-1.0 ✓	Pass
20.4	7035	20.5	0.1	0.5 ✓	Pass

W

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 7**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-26-21.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 8

New Indy
Catawba, SC

15730.001.008
No. 8 Hood Exhaust
Paper Machine Vent 8

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/26/21 ✓	6/26/21 ✓	6/26/21 ✓	---
Time Began	1315	1420	1525	---
Time Ended	1415 ✓	1520	1625	---
Volumetric Flow Rate, (Qs), DSCFM	6.31E+04 ✓	6.57E+04	6.27E+04	6.38E+04
BWS	0.238 ✓	0.230	0.230	0.233
% Oxygen	20.2 ✓	20.2	20.2	20.2
Recovery, %	91.1	91.1	91.1	91.1
<hr/>				
Total Reduced Sulfur (TRS MW)=	34.08			
Concentration, ppm	0.66 ✓	0.58 ✓	0.61 ✓	0.62
Emission Rate, lb/hr	0.22	0.20	0.20	0.21
<hr/>				
H2S (H2S MW)=	34.08			
Concentration, ppm	0.12 ✓	0.09 ✓	0.12 ✓	0.11
Concentration, ppm (Corrected for Recovery)	0.13	0.10	0.13	0.12
Emission Rate, lb/hr	0.04	0.03	0.04	0.04

Am

New Indy
Catawba, SC

15730.001.008
No. 8 Hood Exhaust

Paper Machine Vent 8

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/26/21	6/26/21	6/26/21	---
Time Began	1315	1420	1525	---
Time Ended	1405	1510	1615	---

INPUT DATA

Sampling Time, min	(Theta)	48.0	48	48	48
Stack Diameter, in.	(Dia.)	66	66	66	66
Barometric Pressure, in. Hg	(Pb)	29.68	29.68	29.68	29.68
Static Pressure, in. H ₂ O	(Pg)	-0.71	-0.71	-0.71	-0.71
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030	1.0030	1.0030	1.0030
Orifice Calibration Value	(Delta H@)	1.8000	1.8000	1.8000	1.8000
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft ³	(Vm)	30.745	30.782	30.346	30.624
Meter Temperature, °F	(Tm)	94.9	96.0	92.1	94.3
Meter Temperature, °R	(Tm-R)	554.9	556.0	552.1	554.3
Meter Orifice Pressure, in. H ₂ O	(Delta H)	1.300	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H ₂ O) ^{1/2}	((Delta H) ^{1/2})avg	1.140	1.140	1.140	1.140
Volume H ₂ O Collected, mL	(Vlc)	194.0	184.6	184.1	187.6
CO ₂ Concentration, %	(CO ₂)	0.1	0.1	0.1	0.1
O ₂ Concentration, %	(O ₂)	20.2	20.2	20.2	20.2
Ave Sq Rt Velo Head, (in. H ₂ O) ^{1/2}	((Delta P) ^{1/2})avg	1.096	1.130	1.079	1.102
Stack Temperature, °F	(Ts)	183.6	184.2	184.0	183.9
Stack Temperature, °R	(Ts-R)	643.6	644.2	644.0	643.9
Moisture Fraction (at Saturation)	(BWS)	0.559	0.566	0.564	0.563

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	23.76	23.76	23.76	23.76
Stack Pressure, in. Hg	(Ps)	29.63	29.63	29.63	29.63
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft ³	(Vmstd)	29.189	29.166	28.958	29.105
Standard Water Volume, ft ³	(Vwstd)	9.132	8.689	8.666	8.829
Moisture Fraction (Measured)	(BWS)	0.238	0.230	0.230	0.233
Moisture Fraction (lower sat/meas)	(BWS)	0.238	0.230	0.230	0.233
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.82	28.82	28.82	28.82
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.24	26.34	26.33	26.31
Average Stack Gas Velocity, ft/sec	(Vs)	71.60	73.73	70.40	71.91
Stack Gas Flow, actual, ft ³ /min	(Qa)	102063	105108	100356	102509
Stack Gas Flow, Std, ft ³ /min	(Qs)	63130	65700	62685	63838
Calibration check	(Yqa)	1.0261	1.0259	1.0370	1.030
Percent difference from Y					2.66%

AB for SH ✓

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

static pressure: -0.71

Client New Indy
 Location/Plant Catawba, SC
 Source No. 8 Hood Exhaust
 Sample Location Good
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/24/21
 Test Personnel BIA/BCE
 Sample Time 48 min.

Console ID A023
 Meter Corr., Y 1.003
 Console ΔH@ 1.000
 Probe ID/Length PR6C-6'
 Liner Material SS
 Pitot ID/Coeff. 977 0.84
 Thermo ID A023
 Nozzle ID/Diams. 2.50 in.
 Avg. Nozzle Diam. 16 in.

Ambient Temp. 81 °F
 Baro. Pressure* 29.68 in. Hg
 Static Pressure 29.30 in. H₂O
 Impinger Gain 178.7 mL
 Silica Gel Gain 15.9 g
 Stack Area 23.76 ft²
 Total Traverse Points 16

K Factor N/A

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>0.000</u>	<u>0.000</u>
Pitot	<u>12"</u>	<u>5"</u>
	<u>Good</u>	<u>Good</u>

Filter ID N/A
 Sample ID Run 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DCM INLET TEMP (°F)	DCM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	13:15			100.831									
	3		1.2	1.3	102.7	183	N/A	92	245	253	N/A	67	2	
	6		1.1	1.3	104.6	183		92	244	254		59	2	
	9		1.2	1.3	106.5	183		93	244	252		56	2	
	12		.97	1.3	108.4	184		92	244	257		55	2	
	15		.98	1.3	110.3	184		94	245	253		56	2	
	18		.96	1.3	112.2	185		94	244	266		56	2	
	21		1.1	1.3	114.1	183		94	241	253		58	2	
	24		1.0	1.3	116.0	182		95	240	251		58	2	
B-1	27		1.3	1.3	117.9	182		96	241	251		61	2	
	30		1.4	1.3	119.8	183		96	244	253		57	2	
	33		1.3	1.3	121.8	184		96	242	252		56	2	
	36		1.4	1.3	123.7	185		97	245	254		55	2	
	39		1.5	1.3	125.6	184		97	245	252		56	2	
	42		1.3	1.3	127.5	183		97	241	259		58	2	
	45		1.3	1.3	129.5	185		97	243	251		59	2	
	48	14:05	1.3	1.3	131.576	185		96	247	252		60	2	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-std} scf
			1.0930	1.306	30.745	183.6	94.9	94.9	240/247	251/266	67	67	2	



Integrated Air Services
 Comments: 34-1-2006
 1.0939
 1.2068

Flue Gas Composition
 Oxygen, % 20.2
 Carbon Dioxide, % 0.1
 Moisture, % 23.9

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

Q_s, dscfm
 % Isokinetic
 Calculated by
 QC by

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A023	Ambient Temp.	84 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.003	Baro. Pressure*	29.68 in. Hg
Source	No. 8 Hood Exhaust	Console ΔH@	1.800	Static Pressure	-7.71 in. H ₂ O
Sample Location	Roof	Probe ID/Length	PR6C-6'	Impinger Gain	179.5 mL
W. O. Number	15730.001.008	Liner Material	SS	Silica Gel Gain	5.1 g
Run Number	2	Pitot ID/Coeff.	P77		
Date	6/26/21	Thermo ID	A023	Stack Area	23.76 ft ²
Test Personnel	BCA/BCE	Nozzle ID/Diams.			
Sample Time	48 min.	Avg. Nozzle Diam.	.250 in.	Total Traverse Points	16

K Factor	N/A
----------	-----

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	0.000	0.000
Pitot	12"	5"
	Good	Good

Filter ID N/A
Sample ID 2072

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	14:20	1.1	1.3	131.774	183	N/A	96	243	253	N/A	65	3	
2	3		1.2	1.3	135.6	184		97	243	252		60	3	
3	6		1.2	1.3	137.5	183		96	241	253		58	3	
4	9		1.1	1.3	139.4	183		96	245	254		56	3	
5	12		1.2	1.3	141.3	186		96	244	255		55	3	
6	15		1.3	1.3	143.2	185		98	241	254		56	3	
7	18		1.1	1.3	145.1	185		96	242	255		54	3	
8	21		1.1	1.3	147.0	185		95	244	251		53	3	
B-1	24		1.1	1.3	149.0	183		95	244	253		57	3	
2	27		1.5	1.3	150.9	184		96	243	253		52	3	
3	30		1.4	1.3	152.9	184		97	245	252		52	3	
4	33		1.4	1.3	154.8	184		97	246	252		53	3	
5	36		1.3	1.3	156.7	185		95	243	252		54	3	
6	39		1.5	1.3	158.7	185		96	244	254		55	3	
7	42		1.4	1.3	160.6	184		95	248	252		56	3	
8	45		1.6	1.3	162.556	184		95	244	253		55	3	
8	48	15:10	1.2	1.3	162.556	184		96.0	241/48	251/255		55/56	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m	O ₂ /CO ₂	by Orsat	Fyrite	M3A	Thermocouple Check	Q _s , dscfm	
			1.301	1.300	30.782	184.2	96.0	Leak Check, Pre-run	Post-run			Meter Temp., °F	% Isokinetic	
			1.2812	1.1402								Ref. Temp., °F	Calculated by	
												Result	QC by	



Integrated Air Services

Comments

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SOTV's & #1-2 CBs
Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 8 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/26/21
 Test Personnel BFA/BZ
 Sample Time 48 min.

Console ID AP23
 Meter Corr., Y 1.003
 Console ΔH@ 1.800
 Probe ID/Length PRLC-6'
 Liner Material 53
 Pitot ID/Coeff. 0.77 0.84
 Thermo ID A023
 Nozzle ID/Diams. 0.250 in.
 Avg. Nozzle Diam. 0.250 in.

K Factor N/A
 Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	0.002	0.002
Pitot	12"	7"
	Good	Good

Filter ID N/A
 Sample ID Run 3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1	0	15:25	1.0	1.3	162.998	184	N/A	91	242	253	N/A	67	2	
2	3		1.1	1.3	164.9	184		90	242	252		58	2	
3	6		1.0	1.3	166.7	183		90	244	253		55	2	
4	9		1.1	1.3	168.6	183		89	245	251		53	2	
5	12		1.2	1.3	170.5	185		89	248	255		51	2	
6	15		1.1	1.3	172.4	185		90	243	252		51	2	
7	18		1.1	1.3	174.3	185		90	244	253		52	2	
8	21		1.1	1.3	176.1	185		92	245	262		53	2	
B-1	24		1.2	1.3	178.0	185		93	243	254		58	2	
2	27		1.4	1.3	179.8	184		94	246	252		53	2	
3	30		1.3	1.3	181.8	184		94	246	251		52	2	
4	33		1.3	1.3	183.7	184		94	245	251		52	2	
5	36		1.4	1.3	185.6	184		94	246	254		53	2	
6	39		1.2	1.3	187.5	184		96	245	253		53	2	
7	42		1.2	1.3	189.5	183		94	244	253		54	2	
8	45		1.2	1.3	191.4	183		94	242	251		54	2	
8	48	16:15	1.1	1.3	193.344	183		92.06	242	251		54	2	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T ₁	Avg T ₂	Avg T ₃	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-std} scf
			1.079	1.300	30.346	184	92.06	92.06	242/248	251/255	251/255	67	2	
			1.168	1.1402										



Integrated Air Services

Comments

Flue Gas Composition

Oxygen, %

Carbon Dioxide, %

Moisture, %

20.2

0.1

O₂/CO₂ by Orsat Fyrite M3A255

Leak Check, Pre-run

Post-run

Thermocouple Check

Meter Temp., °F

% Isokinetic

Calculated by

QC by

15730.001.008
 Pulp Dryer, #3 Paper Machine,
 #2-3 Sectors & #1-2 CBs
 Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 8 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	915.9	833.3	643.6		844.7	
Initial	764.9	808.4	640.8		829.4	
Gain	151 ✓	24.9 ✓	2.8 ✓		15.3 ✓	194

Impinger Color Clear Labeled? ☒
Silica Gel Condition Good Sealed? ☒

Run No. 2 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	936.5	704.6	554.8		929.9	
Initial	780.3	682.5	553.6		924.8	
Gain	156.2 ✓	22.1 ✓	1.2 ✓	179.5	5.1	184.6

Impinger Color Clear Labeled? ☒
Silica Gel Condition Good Sealed? ☒

Run No. 3 Sample Date 6/26/21 Recovery Date 6/26/21
Sample ID _____ Filter ID N/A Analyst BEA/BE

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	907.5	830.8	633.4		890.8	
Initial	773.4	789.5	630.8		884.7	
Gain	134.1 ✓	41.3 ✓	2.6 ✓	178	6.1	184.1

Impinger Color Clear Labeled? ☒
Silica Gel Condition Good Sealed? ☒

Check COC for Sample IDs of Media Blanks

24

WESTON
SOLUTIONS®
Integrated Air Services

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
 Pulp Dryer, #3 Paper Machine,
 #2-3 SDTVs, & #1-2 CBs
 Emission Report

Client New Indy
 Location/Plant Catawba, SC
 Source No. 8 Hood Exhaust

Operator VD / LF
 Date 15-Jun-21
 W.O. Number 15730.001.008

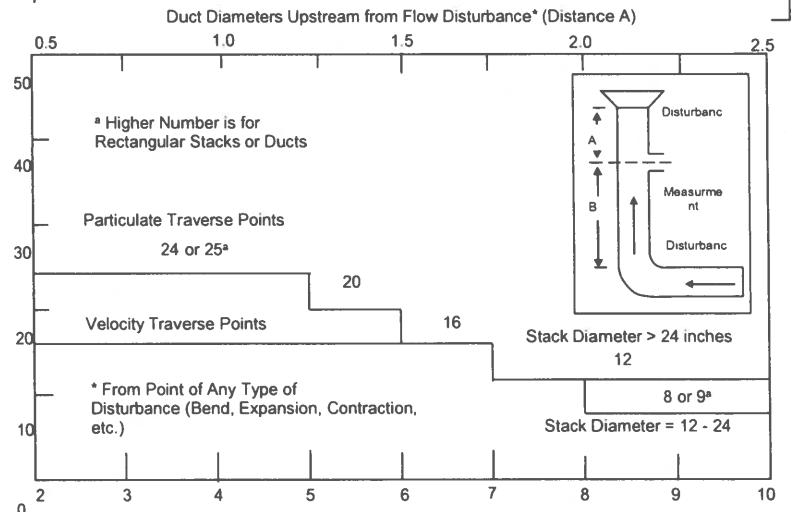
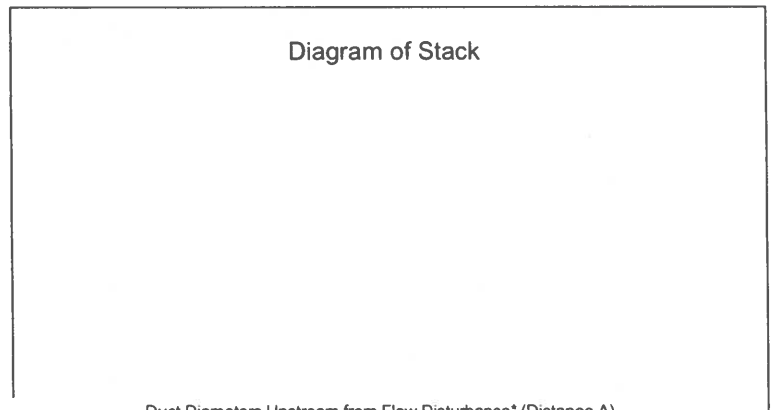
Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse

Distance from far wall to outside of port (in.) = C	66.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	66
Area of Duct (ft ²)	23.76
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations			
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	7	7
3	19.4	13	13
4	32.3	21 1/2	21 1/2
5	67.7	44 1/2	45
6	80.6	53	53 1/2
7	89.5	59	59
8	96.8	64	64
9			
10			
11			
12			

Flow Disturbances	
Upstream - A (ft)	5.5
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.00
Downstream - B (duct diameters)	4.55



$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

Traverse Point Location Percent of Stack -Circular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
T	1	14.6		6.7		4.4		3.2		2.6		2.1
r	2		85.4		25		14.6		10.5		8.2	6.7
a	3			75		29.6		19.4		14.6		11.8
v	4				93.3		70.4		32.3		22.6	17.7
e	5					85.4		67.7		34.2		25
e	6						95.6		80.6		65.8	35.6
s	7							89.5		77.4		64.4
a	8								96.8		85.4	75
i	9									91.8		82.3
P	10										97.4	88.2
o	11											93.3
n	12											97.9

Traverse Point Location Percent of Stack -Rectangular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
T	1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
r	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6
a	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7
v	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8
e	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9
e	6						91.7	78.6	68.8	61.1	55.0	50.0
s	7							92.9	81.3	72.2	65.0	59.1
a	8								93.8	83.3	75.0	68.2
i	9									94.4	85.0	77.3
P	10										95.0	86.4
o	11											95.5
n	12											95.8

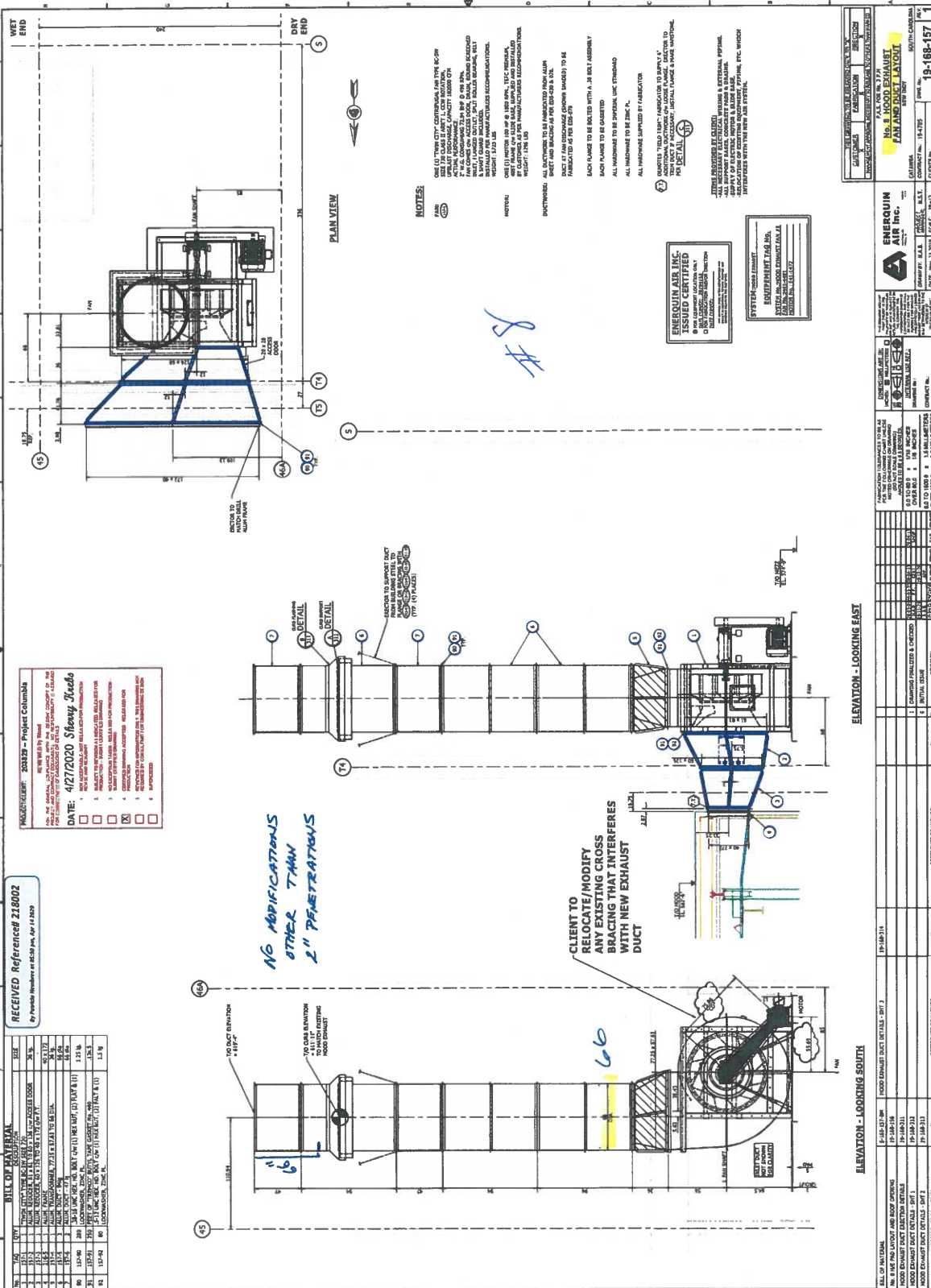
Rectangular Stack Points & Matrix

9 - 3 x 3
 12 - 4 x 3
 16 - 4 x 4
 20 - 5 x 4
 25 - 5 x 5
 30 - 6 x 5
 36 - 6 x 6
 42 - 7 x 6
 49 - 7 x 7

Port Diam. (in) = 4
 Number of Ports = 2

Tape Measure I.D. # TM-07





RUN SUMMARY

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7** *4*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 13:15 End Time 14:15

Average Measured TRS Conc.

0.57 0.60

~~0.54~~ ppm

Recovery No. 3

91.1 %

TRS Corrected for Recovery

~~0.59~~ ppm

0.63 0.66

*AB
9/29 ✓*

*AB
9/15 ✓*

RUN SUMMARY

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *78*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 14:20 End Time 15:20

Average Measured TRS Conc.

0.49 0.53
0.46 ppm

Recovery No. 3

91.1 %

TRS Corrected for Recovery

0.51
0.51 ppm

*AB
9125 ✓*

*0.54
0.58*

*AB
9115 ✓*

RUN SUMMARY

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7** *4*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time 15:25 End Time 16:25

Average Measured TRS Conc.
Recovery No. 3
TRS Corrected for Recovery

0.53 *0.56*
0.51 ppm
91.1 %
0.56 ppm
0.58 *0.61*

AB
91.29 ✓

AB
91.5 ✓

RUN DATA

Number 4

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
13:15	PM vent 8	Run 1												0
13:15	49	0.21		28	0.20		31	0.21		38	0.07		0.77	0.77
13:18	202	0.49		<2		0.054	55	0.30		<2		0.017	0.88	0.88
13:21	<2		0.037	<2		0.054	<2		0.054	22	0.05		0.25	0.25
13:24	<2		0.037	27	0.19		10	0.11		43	0.08		0.50	0.50
13:27	96	0.31		<2		0.054	8	0.10		48	0.08		0.64	0.64
13:30	57	0.23		32	0.22		18	0.16		35	0.07		0.74	0.74
13:33	<2		0.037	<2		0.054	67	0.33		<2		0.017	0.46	0.46
13:36	<2		0.037	<2		0.054	23	0.18		<2		0.017	0.30	0.30
13:39	25	0.14		36	0.23		44	0.26		<2		0.017	0.66	0.66
13:42	<2		0.037	<2		0.054	22	0.17		<2		0.017	0.30	0.30
13:45	7	0.06		<2		0.054	23	0.18		<2		0.017	0.33	0.33
13:48	<2		0.037	69	0.33		54	0.29		98	0.13		0.92	0.92
13:51	<2		0.037	<2		0.054	46	0.27		14	0.04		0.44	0.44
13:54	9	0.07		<2		0.054	14	0.14		47	0.08		0.43	0.43
13:57	9	0.07		113	0.44		12	0.12		<2		0.017	0.67	0.67
14:00	54	0.22		49	0.27		24	0.18		35	0.07		0.82	0.82
14:03	<2		0.037	<2		0.054	<2		0.054	16	0.04		0.23	0.23
14:06	7	0.07		<2		0.054	123	0.47		<2		0.017	0.63	0.63
14:09	10	0.08		<2		0.054	142	0.51		19	0.05		0.75	0.75
14:12	52	0.22		29	0.20		334	0.84		19	0.05		1.36	1.36
Averages			0.12										0.60	0.60

RUN DATA

Number 5

Client: New Indy
 Location: Catawba, SC
 Source: Paper Machine Vent 74
 Project Number: 15730.001.008
 Operator: VD
 Date: 26 Jun 2021
 Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
14:20	15	0.10		<2		0.054	24	0.19		<2		0.017	0.38
14:23	58	0.23		15	0.14		31	0.21		20	0.05		0.68
14:26	31	0.16		11	0.11		<2		0.054	<2		0.017	0.36
14:29	13	0.09		<2			31	0.22		53	0.09		0.54
14:32	15	0.10		<2			30	0.21		<2		0.017	0.40
14:35	16	0.10		11	0.11		<2		0.054	<2		0.017	0.31
14:38	<2		0.037	<2		0.054	71	0.34		<2		0.017	0.47
14:41	<2		0.037	<2		0.054	81	0.37		47	0.08		0.63
14:44	13	0.09		17	0.15		<2		0.054	56	0.09		0.48
14:47	<2		0.037	16	0.15		94	0.41		58	0.10		0.78
14:50	14	0.10		53	0.28		6	0.08		30	0.07		0.60
14:53	<2		0.037	91	0.39		34	0.23		<2		0.017	0.69
14:56	9	0.08		59	0.30		17	0.15		34	0.07		0.67
14:59	<2		0.037	31	0.21		19	0.16		106	0.13		0.68
15:02	<2		0.037	40	0.24		<2		0.054	<2		0.017	0.37
15:05	9	0.07		<2		0.054	56	0.30		23	0.05		0.54
15:08	15	0.10		<2		0.054	<2		0.054	29	0.06		0.33
15:11	64	0.24		<2		0.054	91	0.40		<2		0.017	0.73
15:14	<2		0.037	<2		0.054	59	0.31		25	0.06		0.52
15:17	15	0.10		14	0.13		9	0.11		10	0.03		0.41
Averages			0.09										0.53

RUN DATA

Number 6

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7 *do*
Project Number: 15730.001.008
Operator: VD
Date: 26 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
15:25	<2		0.037	11	0.12		<2		0.054	18	0.05			0.30
15:28	67	0.25		7	0.09		11	0.12		<2		0.017		0.49
15:31	44	0.20		11	0.12		13	0.13		<2		0.017		0.48
15:34	<2		0.037	<2		0.054	13	0.13		27	0.06			0.34
15:37	17	0.11		5	0.07		23	0.18		78	0.11			0.59
15:40	25	0.14		74	0.35		22	0.18		17	0.05			0.75
15:43	29	0.15		9	0.10		10	0.11		<2		0.017		0.40
15:46	83	0.29		<2		0.054	9	0.11		94	0.13			0.70
15:49	7	0.07		12	0.12		4	0.07		37	0.07			0.40
15:52	<2		0.037	71	0.34		<2		0.054	22	0.05			0.54
15:55	10	0.08		29	0.20		24	0.18		67	0.10			0.67
15:58	14	0.10		25	0.18		<2		0.054	12	0.04			0.41
16:01	21	0.13		15	0.14		28	0.20		9	0.03			0.53
16:04	<2		0.037	35	0.23		14	0.14		<2		0.017		0.43
16:07	8	0.07		<2		0.054	21	0.17		<2		0.017		0.33
16:10	14	0.10		11	0.12		135	0.50		81	0.12			0.94
16:13	67	0.25		<2		0.054	<2		0.054	29	0.06			0.49
16:16	14	0.10		25	0.18		249	0.71		<2		0.017		1.03
16:19	16	0.10		38	0.24		84	0.38		<2		0.017		0.75
16:22	<2		0.037	121	0.46		<2		0.054	<2		0.017		0.58
Averages														0.56
														0.12

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *7/8*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRs
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
PM vent 8 Run 1									
13:15	49	0.21	28	0.20	31	0.21	38	0.07	0.77
13:18	202	0.49	<2	<0.05	55	0.30	<2	<0.02	0.79
13:21	<2	<0.04	<2	<0.05	<2	<0.05	22	0.05	0.11
13:24	<2	<0.04	27	0.19	10	0.11	43	0.08	0.47
13:27	96	0.31	<2	<0.05	8	0.10	48	0.08	0.58
13:30	57	0.23	32	0.22	18	0.16	35	0.07	0.74
13:33	<2	<0.04	<2	<0.05	67	0.33	<2	<0.02	0.33
13:36	<2	<0.04	<2	<0.05	23	0.18	<2	<0.02	0.18
13:39	25	0.14	36	0.23	44	0.26	<2	<0.02	0.63
13:42	<2	<0.04	<2	<0.05	22	0.17	<2	<0.02	0.17
13:45	7	0.06	<2	<0.05	23	0.18	<2	<0.02	0.24
13:48	<2	<0.04	69	0.33	54	0.29	98	0.13	0.88
13:51	<2	<0.04	<2	<0.05	46	0.27	14	0.04	0.35
13:54	9	0.07	<2	<0.05	14	0.14	47	0.08	0.38
13:57	9	0.07	113	0.44	12	0.12	<2	<0.02	0.64
14:00	54	0.22	49	0.27	24	0.18	35	0.07	0.82
14:03	<2	<0.04	<2	<0.05	<2	<0.05	16	0.04	0.09
14:06	7	0.07	<2	<0.05	123	0.47	<2	<0.02	0.54
14:09	10	0.08	<2	<0.05	142	0.51	19	0.05	0.69
14:12	52	0.22	29	0.20	334	0.84	19	0.05	1.36
Average		0.11		0.10		0.24		0.04	0.54 <i>✓</i>

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RUN DATA

Number *82*

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *78*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
14:20	15	0.10	<2	<0.05	24	0.19	<2	<0.02	0.29
14:23	58	0.23	15	0.14	31	0.21	20	0.05	0.68
14:26	31	0.16	11	0.11	<2	<0.05	<2	<0.02	0.27
14:29	13	0.09	<2	<0.05	31	0.22	53	0.09	0.49
14:32	15	0.10	<2	<0.05	30	0.21	<2	<0.02	0.31
14:35	16	0.10	11	0.11	<2	<0.05	<2	<0.02	0.22
14:38	<2	<0.04	<2	<0.05	71	0.34	<2	<0.02	0.34
14:41	<2	<0.04	<2	<0.05	81	0.37	47	0.08	0.54
14:44	13	0.09	17	0.15	<2	<0.05	56	0.09	0.42
14:47	<2	<0.04	16	0.15	94	0.41	58	0.10	0.74
14:50	14	0.10	53	0.28	6	0.08	30	0.07	0.60
14:53	<2	<0.04	91	0.39	34	0.23	<2	<0.02	0.62
14:56	9	0.08	59	0.30	17	0.15	34	0.07	0.67
14:59	<2	<0.04	31	0.21	19	0.16	106	0.13	0.64
15:02	<2	<0.04	40	0.24	<2	<0.05	<2	<0.02	0.24
15:05	9	0.07	<2	<0.05	56	0.30	23	0.05	0.48
15:08	15	0.10	<2	<0.05	<2	<0.05	29	0.06	0.23
15:11	64	0.24	<2	<0.05	91	0.40	<2	<0.02	0.64
15:14	<2	<0.04	<2	<0.05	59	0.31	25	0.06	0.43
15:17	15	0.10	14	0.13	9	0.11	10	0.03	0.41
Average		0.08		0.11		0.18		0.04	0.46 ✓

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RUN DATA

Number *83*

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent *78***

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
15:25	<2	<0.04	11	0.12	<2	<0.05	18	0.05	0.21
15:28	67	0.25	7	0.09	11	0.12	<2	<0.02	0.46
15:31	44	0.20	11	0.12	13	0.13	<2	<0.02	0.44
15:34	<2	<0.04	<2	<0.05	13	0.13	27	0.06	0.25
15:37	17	0.11	5	0.07	23	0.18	78	0.11	0.59
15:40	25	0.14	74	0.35	22	0.18	17	0.05	0.75
15:43	29	0.15	9	0.10	10	0.11	<2	<0.02	0.36
15:46	83	0.29	<2	<0.05	9	0.11	94	0.13	0.65
15:49	7	0.07	12	0.12	4	0.07	37	0.07	0.40
15:52	<2	<0.04	71	0.34	<2	<0.05	22	0.05	0.45
15:55	10	0.08	29	0.20	24	0.18	67	0.10	0.67
15:58	14	0.10	25	0.18	<2	<0.05	12	0.04	0.36
16:01	21	0.13	15	0.14	28	0.20	9	0.03	0.53
16:04	<2	<0.04	35	0.23	14	0.14	<2	<0.02	0.36
16:07	8	0.07	<2	<0.05	21	0.17	<2	<0.02	0.24
16:10	14	0.10	11	0.12	135	0.50	81	0.12	0.94
16:13	67	0.25	<2	<0.05	<2	<0.05	29	0.06	0.38
16:16	14	0.10	25	0.18	249	0.71	<2	<0.02	0.99
16:19	16	0.10	38	0.24	84	0.38	<2	<0.02	0.72
16:22	<2	<0.04	121	0.46	<2	<0.05	<2	<0.02	0.46
Average		0.11		0.15		0.16		0.04	0.51 ✓

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RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *78*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

After Run 3 Before Run 4
Start Time 12:55 End Time 13:09

Recovery Gas to Probe, Time 12:55

Peak Areas, mv-sec			Average	ppm
16925	16900	17033	16953	7.34

Recovery Gas to GC, Time 13:06

Peak Areas, mv-sec			Average	ppm
18883	18581	18955	18807	7.82

Recovery 93.9% ✓

SV

RECOVERY DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *f y*

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

After Run 6 Before Run 7
Start Time 16:25 End Time 16:35

Recovery Gas to Probe, Time 16:25

Peak Areas, mv-sec			Average	ppm
15588	15927	16534	16016	7.09

Recovery Gas to GC, Time 16:31

Peak Areas, mv-sec			Average	ppm
18437	18819	18738	18664	7.78

Recovery 91.1% ✓

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CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *18 AB*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

	Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg	
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1 Flow = 48.0 mL/Min	9.58 ppm	9.52 ppm	6.20 ppm	4.83 ppm
Time: 07:01	Peak Areas, mv-sec			
	25119	23385	10987	48706
	25616	23496	10706	47186
	25021	22672	10690	48066
Average Area	25252 ✓	23184	10794	47986
2 Flow = 81.6 mL/Min	5.64 ppm	5.60 ppm	3.65 ppm	2.84 ppm
Time: 07:34	Peak Areas, mv-sec			
	11971	9531	4072	19617
	11666	9535	4189	19344
	11820	9242	4068	20012
Average Area	11819	9436 ✓	4110	19658
3 Flow = 151 mL/Min	3.05 ppm	3.02 ppm	1.97 ppm	1.54 ppm
Time: 07:49	Peak Areas, mv-sec			
	3892	3195	1507	6761
	3898	3136	1468	6767
	3818	3182	1462	6752
Average Area	3869	3171	1479 ✓	6760

SK

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *8/11*

Project Number: **15730.001.008**

Operator: **VD**

Date: **25 Jun 2021**

Method **16**

H₂S	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	9.58	5.64	3.05			
Area, mv-sec	25252	11819	3869			
Calc. Conc., ppm	9.36	5.89	2.98			
% Error	-2.4	4.5	-2.0 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	1.6414	2.8084	0.9978	2	0.04	
MeSH	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	9.52	5.60	3.02			
Area, mv-sec	23184	9436	3171			
Calc. Conc., ppm	9.47	5.65	3.01			
% Error	-0.5	0.9	-0.4 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	1.7368	2.6693	0.9999	2	0.05	
DMS	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	6.20	3.65	1.97			
Area, mv-sec	10794	4110	1479			
Calc. Conc., ppm	6.26	3.59	1.99			
% Error	0.9	-1.7	0.8 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	1.7325	2.6531	0.9997	2	0.05	
DMDS	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	4.83	2.84	1.54			
Area, mv-sec	47986	19658	6760			
Calc. Conc., ppm	4.82	2.86	1.53			
% Error	-0.3	0.6	-0.3 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	1.7107	3.5133	>0.9999	2	0.02	

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *LCF AB will*

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.70 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0

1 Flow = 48.0 mL/Min	9.58 ppm	9.52 ppm	6.20 ppm	4.83 ppm
Time: 16:36	Peak Areas, mv-sec			
	26011	25303	11444	51862
	26531	26149	12036	53970
	27302	26754	12114	53372
Average Area	26615	26069	11864	53068

2 Flow = 88.9 mL/Min	5.17 ppm	5.14 ppm	3.35 ppm	2.61 ppm
Time: 16:50	Peak Areas, mv-sec			
	9447	7596	3066	16100
	9456	7369	3124	14977
	9570	7546	3109	14905
Average Area	9491	7504	3100	15327

3 Flow = 133 mL/Min	3.45 ppm	3.43 ppm	2.23 ppm	1.74 ppm
Time: 17:14	Peak Areas, mv-sec			
	4013	3384	1323	6743
	4015	3427	1344	6741
	3979	3463	1344	6769
Average Area	4002	3425	1337	6751

LCF

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent 7th fl**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun.2021**

H₂S	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	9.58	5.17	3.45			
Area, mv-sec	26615	9491	4002			
Calc. Conc., ppm	9.43	5.38	3.37			
% Error	-1.6	4.1	-2.4 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	1.8396	2.6323	0.9977	2	0.05	
MeSH	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	9.52	5.14	3.43			
Area, mv-sec	26069	7504	3425			
Calc. Conc., ppm	9.54	5.10	3.44			
% Error	0.3	-0.7	0.4 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	1.9895	2.4671	0.9999	2	0.08	
DMS	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	6.20	3.35	2.23			
Area, mv-sec	11864	3100	1337			
Calc. Conc., ppm	6.22	3.32	2.24			
% Error	0.3	-0.8	0.5 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	2.1400	2.3753	0.9999	2	0.11	
DMDS	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	4.83	2.61	1.74			
Area, mv-sec	53068	15327	6751			
Calc. Conc., ppm	4.83	2.61	1.74			
% Error	-0.0	0.1	-0.0 ✓			
<u>Calibration Curve</u>	<u>Slope</u>	<u>Intercept</u>	<u>Corr. Coeff.</u>	<u>Min. Area</u>	<u>Det. Lim.</u>	
	2.0180	3.3447	>0.9999	2	0.03	

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ANALYTES AND STANDARDS

Client: **New Indy** Project Number: **15730.001.008**
Location: **Catawba, SC** Operator: **VD**
Source: **Paper Machine Vent** *7-6 AG 2011* Method **16** Date: **25 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 ✓	901 ✓	758 ✓	895 ✓
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg Ambient Temperature: 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70) \\ = 460 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy** Project Number: **15730.001.008**
Location: **Catawba, SC** Operator: **VD**
Source: **Paper Machine Vent** *7/6 10/11* Method **16** Date: **25 Jun 2021**

File: E:\6-26-21.trs
Program Version: 2.0, built 21 Feb 2015 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases		Temperatures, °C	Columns
Press.	Flow		
psi	mL/min		
H ₂	30	50	Primary: 3'
Air	30	60	Secondary:
Carrier	50	30	Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

RUN DATA

Number 7

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vent** *Handwritten initials*

Method **16**
Calibration **1**

Project Number: **15730.001.008**

Operator: **VD**

Date: **26 Jun '2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
17:44	18765	7.81	<2	<0.05	<2	<0.05	<2	<0.02	7.81
17:47	19416	7.97	<2	<0.05	<2	<0.05	<2	<0.02	7.97
17:50	18473	7.73	<2	<0.05	<2	<0.05	<2	<0.02	7.73
17:53	18357	7.70	<2	<0.05	<2	<0.05	<2	<0.02	7.70
Average		7.80	<0.05		<0.05		<0.02		7.80 ✓

Handwritten initials

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
14:21:27	6775	20.2	-11	0.1
14:21:42	6776	20.2	-11	0.1
14:21:57	6776	20.2	-11	0.1
14:22:12	6777	20.2	-11	0.1
14:22:27	6777	20.2	-11	0.1
14:22:42	6777	20.2	-12	0.1
14:22:57	6777	20.2	-11	0.1
14:23:12	6776	20.2	-11	0.1
14:23:27	6778	20.2	-12	0.1
14:23:42	6777	20.2	-10	0.1
14:23:57	6777	20.2	-10	0.1
14:24:12	6777	20.2	-11	0.1
14:24:27	6778	20.2	-11	0.1
14:24:42	6777	20.2	-11	0.1
14:24:57	6777	20.2	-10	0.1
14:25:12	6778	20.2	-9	0.1
14:25:27	6778	20.2	-11	0.1
14:25:42	6778	20.2	-10	0.1
Avg	6777	20.2	-11	0.1

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
15:30:53	6776	20.2	-11	0.1
15:31:08	6777	20.2	-10	0.1
15:31:23	6777	20.2	-11	0.1
15:31:38	6776	20.2	-10	0.1
15:31:53	6777	20.2	-11	0.1
15:32:08	6778	20.2	-11	0.1
15:32:23	6775	20.2	-11	0.1
15:32:38	6777	20.2	-12	0.1
15:32:53	6777	20.2	-12	0.1
15:33:08	6777	20.2	-14	0.1
15:33:23	6776	20.2	-13	0.1
15:33:38	6777	20.2	-14	0.1
15:33:53	6777	20.2	-16	0.1
15:34:08	6776	20.2	-13	0.1
15:34:23	6777	20.2	-13	0.1
15:34:38	6778	20.2	-14	0.1
15:34:53	6777	20.2	-12	0.1
Avg	6777	20.2	-12	0.1

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
16:29:58	6779	20.2	-9	0.1
16:30:13	6778	20.2	-8	0.1
16:30:28	6778	20.2	-7	0.1
16:30:43	6779	20.2	-7	0.1
16:30:58	6780	20.2	-8	0.1
16:31:13	6780	20.2	-8	0.1
16:31:28	6778	20.2	-8	0.1
16:31:43	6779	20.2	-7	0.1
16:31:58	6778	20.2	-8	0.1
16:32:13	6779	20.2	-7	0.1
16:32:28	6779	20.2	-8	0.1
16:32:43	6781	20.2	-8	0.1
16:32:58	6778	20.2	-8	0.1
16:33:13	6777	20.2	-8	0.1
16:33:28	6780	20.2	-7	0.1
16:33:43	6779	20.2	-9	0.1
16:33:58	6779	20.2	-8	0.1
16:34:13	6779	20.2	-8	0.1
16:34:28	6780	20.2	-8	0.1
16:34:43	6779	20.2	-8	0.1
16:34:58	6779	20.2	-8	0.1
16:35:13	6778	20.2	-7	0.1
16:35:28	6780	20.2	-9	0.1
16:35:43	6780	20.2	-9	0.1
16:35:58	6779	20.2	-8	0.1
Avg	6779	20.2	-8	0.1

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
16:38:22	3393	10.2	3339	9.8
16:38:37	3316	9.9	3407	10.0
16:38:52	3315	9.9	3412	10.0
SG9168283BAL O2=10.12 CO2= 10.16				
16:39:07	3312	9.9	3413	10.0
16:39:22	3312	9.9	3416	10.0
16:39:37	3311	9.9	3418	10.0
16:39:52	3310	9.9	3416	10.0
16:40:07	3311	9.9	3417	10.0
16:40:22	3311	9.9	3417	10.0
16:40:37	3309	9.9	3417	10.0
16:40:52	3311	9.9	3418	10.0
16:41:07	3309	9.9	3418	10.0
16:41:22	3310	9.9	3418	10.0
16:41:37	3310	9.9	3417	10.0
16:41:52	3311	9.9	3417	10.0
16:42:07	3311	9.9	3418	10.0
16:42:22	3312	9.9	3416	10.0
16:42:37	3313	9.9	3416	10.0
16:42:52	3315	9.9	3413	10.0
16:43:07	3317	9.9	3411	10.0
16:43:22	3316	9.9	3410	10.0
16:43:37	3321	10.0	3407	10.0
16:43:52	3334	10.0	3395	10.0
16:44:07	3363	10.1	3365	9.9
Avgs	3319	9.9	3409	10.0

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time: 08:07

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	8
10.1 ✓	SG9168283BAL	3293
19.5 ✓	CC454190	6574

Curve Coefficients

Slope	Intercept	Corr. Coeff.
336.6 ✓	-29 ✓	0.9998 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-32
10.2 ✓	SG9168283BAL	3417
20.4 ✓	CC454190	7035

Curve Coefficients

Slope	Intercept	Corr. Coeff.
346.4 ✓	-56 ✓	0.9999 ✓

✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Start Time: 08:07

O₂

Method: EPA 3A

Span Conc. 19.5 %

Slope 336.6

Intercept -29.2

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	8	0.1	0.1	0.5 ✓	Pass
10.1	3293	9.9	-0.2	-1.0 ✓	Pass
19.5	6574	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.4 %

Slope 346.4

Intercept -55.6

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-32	0.1	0.1	0.5 ✓	Pass
10.2	3417	10.0	-0.2	-1.0 ✓	Pass
20.4	7035	20.5	0.1	0.5 ✓	Pass

✓

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vent 8**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-26-21b.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX D

VENT 1 (VOIDED DATA)

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 15:00 End Time 16:00

Average Measured TRS Conc. 0.67 ppm ✓
Recovery No. 2 98.7 % ✓
TRS Corrected for Recovery 0.68 ppm ✓

✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 16:02 End Time 17:02

Average Measured TRS Conc. 0.91 ppm ✓
Recovery No. 2 98.7 % ✓
TRS Corrected for Recovery 0.92 ppm ✓

✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 17:04 End Time 18:04

Average Measured TRS Conc. 0.92 ppm ✓
Recovery No. 2 98.7 % ✓
TRS Corrected for Recovery 0.93 ppm ✓

N

RUN DATA

Number 1

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
15:00	15	0.28	13	0.32	<2	<0.12	<2	<0.037	0.60
15:03	132	0.83	<2	<0.13	<2	<0.12	<2	<0.037	0.83
15:06	11	0.24	18	0.37	<2	<0.12	<2	<0.037	0.61
15:09	38	0.45	67	0.69	<2	<0.12	<2	<0.037	1.14
15:12	69	0.60	5	0.21	<2	<0.12	<2	<0.037	0.81
15:15	16	0.29	39	0.53	<2	<0.12	<2	<0.037	0.82
15:18	10	0.23	<2	<0.13	<2	<0.12	<2	<0.037	0.23
15:21	7	0.19	<2	<0.13	<2	<0.12	<2	<0.037	0.19
15:24	10	0.23	23	0.42	<2	<0.12	<2	<0.037	0.64
15:27	52	0.52	19	0.37	<2	<0.12	<2	<0.037	0.90
15:30	18	0.31	29	0.47	<2	<0.12	<2	<0.037	0.77
15:33	13	0.27	21	0.39	<2	<0.12	<2	<0.037	0.66
15:36	50	0.51	31	0.48	<2	<0.12	<2	<0.037	0.99
15:39	9	0.23	<2	<0.13	<2	<0.12	<2	<0.037	0.23
15:42	5	0.16	19	0.38	<2	<0.12	<2	<0.037	0.54
15:45	24	0.36	6	0.21	<2	<0.12	<2	<0.037	0.57
15:48	30	0.40	<2	<0.13	<2	<0.12	<2	<0.037	0.40
15:51	<2	<0.10	<2	<0.13	<2	<0.12	<2	<0.037	-
15:54	17	0.30	167	1.07	<2	<0.12	<2	<0.037	1.37
15:57	44	0.48	52	0.61	<2	<0.12	<2	<0.037	1.09
Average		0.34		0.33		<0.12		<0.037	0.67 ✓

RUN DATA

Number 2

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
16:02	17	0.30	<2	<0.13	<2	<0.12	<2	<0.037	0.30
16:05	<2	<0.10	<2	<0.13	<2	<0.12	<2	<0.037	-
16:08	7	0.19	<2	<0.13	<2	<0.12	<2	<0.037	0.19
16:11	113	0.77	<2	<0.13	194	1.05	<2	<0.037	1.82
16:14	<2	<0.10	12	0.31	<2	<0.12	42	0.17	0.65
16:17	9	0.22	13	0.32	5	0.18	<2	<0.037	0.72
16:20	11	0.24	<2	<0.13	<2	<0.12	45	0.18	0.59
16:23	35	0.43	4	0.19	81	0.69	8	0.07	1.46
16:26	37	0.44	6	0.22	20	0.35	75	0.23	1.47
16:29	16	0.29	<2	<0.13	<2	<0.12	18	0.11	0.51
16:32	5	0.16	10	0.28	96	0.75	<2	<0.037	1.20
16:35	<2	<0.10	77	0.74	<2	<0.12	19	0.12	0.97
16:38	46	0.49	<2	<0.13	<2	<0.12	11	0.08	0.66
16:41	<2	<0.10	31	0.48	45	0.52	34	0.15	1.31
16:44	21	0.34	21	0.39	63	0.61	16	0.10	1.55
16:47	21	0.34	36	0.51	6	0.20	87	0.24	1.54
16:50	6	0.19	26	0.44	<2	<0.12	45	0.18	0.98
16:53	13	0.26	<2	<0.13	<2	<0.12	11	0.09	0.43
16:56	15	0.28	<2	<0.13	13	0.28	54	0.19	0.95
16:59	79	0.64	4	0.18	<2	<0.12	<2	<0.037	0.82
Average		0.28		0.20		0.23		0.10	0.91 ✓

RUN DATA

Number 3

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
17:04	59	0.56	<2	<0.13	<2	<0.12	<2	<0.037	0.56
17:07	24	0.36	20	0.39	39	0.48	<2	<0.037	1.23
17:10	22	0.34	16	0.35	34	0.45	<2	<0.037	1.15
17:13	25	0.36	31	0.48	<2	<0.12	27	0.14	1.11
17:16	27	0.38	13	0.32	<2	<0.12	<2	<0.037	0.69
17:19	66	0.59	<2	<0.13	<2	<0.12	<2	<0.037	0.59
17:22	10	0.23	33	0.50	<2	<0.12	46	0.18	1.08
17:25	<2	<0.10	<2	<0.13	19	0.35	<2	<0.037	0.35
17:28	<2	<0.10	8	0.26	57	0.58	<2	<0.037	0.84
17:31	4	0.14	37	0.52	23	0.38	<2	<0.037	1.04
17:34	46	0.49	<2	<0.13	72	0.65	<2	<0.037	1.14
17:37	5	0.17	5	0.20	53	0.56	20	0.12	1.17
17:40	<2	<0.10	16	0.35	59	0.59	10	0.08	1.11
17:43	44	0.48	20	0.39	32	0.44	16	0.11	1.53
17:46	17	0.30	<2	<0.13	26	0.40	27	0.14	0.98
17:49	24	0.36	<2	<0.13	<2	<0.12	99	0.26	0.88
17:52	<2	<0.10	13	0.32	12	0.28	<2	<0.037	0.60
17:55	15	0.28	4	0.18	10	0.25	24	0.13	0.96
17:58	26	0.37	5	0.20	21	0.36	36	0.16	1.25
18:01	<2	<0.10	<2	<0.13	<2	<0.12	16	0.10	0.21
Average		0.27		0.22		0.29		0.07	0.92

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Before Run 1
Start Time 08:11 End Time 08:31

Recovery Gas to Probe, Time 08:11

Peak Areas, mv-sec			Average	ppm
10815	11212	10554	10860	7.38

Recovery Gas to GC, Time 08:26

Peak Areas, mv-sec			Average	ppm
12058	12718	12683	12486	7.91

Recovery 93.3%

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

After Run 3

Start Time 18:08 End Time 18:27

Recovery Gas to Probe, Time 18:08

Peak Areas, mv-sec			Average	ppm
13435	13768	13995	13733 ✓	8.29

Recovery Gas to GC, Time 18:22

Peak Areas, mv-sec			Average	ppm
13868	14119	14335	14107 ✓	8.41

Recovery 98.7% /

✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.30 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	466	463	302	235
Ret. Time, sec	25.0	35.0	63.0	132.0
<hr/>				
1 Flow = 42.9 mL/Min	10.9 ppm	10.8 ppm	7.04 ppm	5.48 ppm
Time: 06:01	Peak Areas, mv-sec			
	23855	22293	10526	42673
	23215	21931	9998	42671
	22458	20868	9790	39883
Average Area	23176 /	21697 /	10105 /	41742 /
<hr/>				
2 Flow = 73.0 mL/Min	6.39 ppm	6.34 ppm	4.13 ppm	3.22 ppm
Time: 07:11	Peak Areas, mv-sec			
	8465	7583	3422	15009
	8597	7440	3304	15088
	8224	7258	3241	15119
Average Area	8429 /	7427 /	3322 /	15072 /
<hr/>				
3 Flow = 160 mL/Min	2.91 ppm	2.89 ppm	1.89 ppm	1.47 ppm
Time: 07:27	Peak Areas, mv-sec			
	1616	1350	665	3068
	1680	1357	629	2997
	1609	1367	669	3070
Average Area	1635 /	1358 /	655 /	3045 /

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

H₂S	1	2	3		
Time	06:01	07:11	07:27		
Concentration, ppm	10.9	6.39	2.91		
Area, mv-sec	23176	8429	1635		
Calc. Conc., ppm	10.7	6.51	2.89		
% Error	-1.2	2.0	-0.8		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	2.0185	2.2831	0.9997	2	0.10
MeSH	1	2	3		
Time	06:01	07:11	07:27		
Concentration, ppm	10.8	6.34	2.89		
Area, mv-sec	21697	7427	1358		
Calc. Conc., ppm	10.7	6.44	2.88		
% Error	-0.9	1.5	-0.6		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	2.1084	2.1655	0.9998	2	0.13
DMS	1	2	3		
Time	06:01	07:11	07:27		
Concentration, ppm	7.04	4.13	1.89		
Area, mv-sec	10105	3322	655		
Calc. Conc., ppm	7.05	4.13	1.89		
% Error	0.1	-0.2	0.1		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	2.0770	2.2430	>0.9999	2	0.12
DMDS	1	2	3		
Time	06:01	07:11	07:27		
Concentration, ppm	5.48	3.22	1.47		
Area, mv-sec	41742	15072	3045		
Calc. Conc., ppm	5.44	3.26	1.46		
% Error	-0.8	1.3	-0.5		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9911	3.1557	0.9999	2	0.037

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	15.0	15.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 ✓	901	✓758	✓ 895 ✓
Permeation Rate, nL/min*	461	458	299	233

Barometric Pressure: 29.60 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.60) \\ = 461 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine Vents**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

File: E:\New Indy\6-23-21.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA
Detector Range: 10

Gases		Temperatures, °C	Columns
Press.	Flow		
psi	mL/min		
H ₂	30 50	Column: 100	Primary: 3'
Air	30 60	Detector: 120	Secondary:
Carrier	50 30		Sample Loop: 6" unlined

Injection Cycle

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ± 10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.60 in. Hg

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 1 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/23/21
 Test Personnel BEA/BE
 Sample Time 48 min.

Console ID A23
 Meter Corr., Y 1.003
 Console ΔH@ 1.50
 Probe ID/Length PH66-6'
 Liner Material SS
 Pitot ID/Coeff. P77
 Thermo ID A23
 Nozzle ID/Diams. -250
 Avg. Nozzle Diam. in.

Ambient Temp. 84 °F
 Baro. Pressure* 29.58 in. Hg
 Static Pressure -20 in. H₂O
 Impinger Gain 150.4 mL
 Silica Gel Gain 7.5 g
 Stack Area 13.64 ft²
 Total Traverse Points 16

K Factor N/A

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>0.007</u>	<u>0.001</u>
Pitot	<u>14"</u>	<u>8"</u>
	<u>Good</u>	<u>Good</u>

Filter ID N/A
 Sample ID 23

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	16:04			513.550	173	NA	89	253	261	NA	59	3	
2	3		.04	1.3	515.6	174		89	256	263		53	3	
3	6		.03	1.3	517.4	174		88	254	263		54	3	
4	9		.04	1.3	519.3	174		89	253	264		51	3	
5	12		.04	1.3	521.3	172		89	253	268		52	3	
6	15		.04	1.3	523.2	172		88	252	267		53	3	
7	18		.03	1.3	525.1	172		90	252	268		54	3	
8	21		.03	1.3	526.9	171		90	253	267		55	3	
B-1	24		.04	1.3	528.8	169		90	249	267		57	3	
2	27		.04	1.3	530.8	172		90	250	264		66	3	
3	30		.04	1.3	532.8	173		90	251	264		57	3	
4	33		.03	1.1	534.7	173		90	252	261		57	3	
5	36		.03	1.1	536.7	173		90	251	266		58	3	
6	39		.02	1.3	538.6	173		89	253	267		58	3	
7	42		.03	1.3	540.5	173		90	252	267		59	3	
8	45		.03	1.3	542.5	173		90	253	266		58	3	
8	48	16:54	.04	1.3	544.528	173	89.4	90	253	266		59	3	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-sd} scf
			<u>0.1863</u>	<u>1.300</u>	<u>30.978</u>	<u>172.56</u>	<u>89.4</u>		<u>249/256</u>	<u>261/268</u>	<u>267</u>	<u>59</u>	<u>3</u>	
			<u>0.035</u>	<u>1.1402</u>										

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run _____
 Post-run _____

Flue Gas Composition
 Oxygen, % _____
 Carbon Dioxide, % _____
 Moisture, % _____

Comments _____

QC by _____

15730.001.008
 Pump Dryer, No Paper Machine,
 #2-3 SBTVA & #1-2 CBs
 Emission Report



Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 1 Hood Exhaust
 Sample Location Roof
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/23/21
 Test Personnel BEH/BE
 Sample Time 48 min.

Console ID A623
 Meter Corr., Y 1.063
 Console ΔH@ 1.8600
 Probe ID/Length PR-6C 6'
 Liner Material 55
 Pitot ID/Coeff. 0.84
 Thermo ID A623
 Nozzle ID/Diams. 1/4"
 Avg. Nozzle Diam. .250 in.

Ambient Temp. 81 °F
 Baro. Pressure* 29.58 in. Hg
 Static Pressure -51 in. H₂O
 Impinger Gain 160.8 mL
 Silica Gel Gain 11.1 g
 Stack Area 13.64 ft²
 Total Traverse Points 16


K Factor N/A

Leak Checks

	Initial	Final
Volume, ft ³	0.002	0.002
@ Vac., in. Hg	12"	7"
Pitot	Good	Good

Filter ID FA
 Sample ID FW2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	1602			481/900									
	3		.04	1.3	483.8	173	N/A	91	254	260	N/A	65	3	
2	6		.05	1.3	485.8	179		90	252	263		63	3	
3	9		.04	1.3	487.4	177		90	255	260		62	3	
4	12		.05	1.3	489.5	177		88	252	265		60	3	
5	15		.04	1.3	491.6	176		88	254	265		60	3	
6	18		.04	1.3	493.2	176		87	257	264		56	3	
7	21		.02	1.3	495.5	174		88	254	265		66	3	
8	24		.02	1.3	497.4	162		88	254	263		67	3	
B-1	27		.04	1.3	499.3	170		89	253	266		64	3	
2	30		.03	1.3	501.2	175		89	255	265		65	3	
3	33		.03	1.3	503.1	175		90	254	266		63	3	
4	36		.03	1.3	505.1	175		89	252	265		63	3	
5	39		.04	1.3	507.1	174		89	252	266		63	3	
6	42		.04	1.3	509.0	172		90	253	265		63	3	
7	45		.03	1.3	511.0	172		89	253	266		64	3	
8	48	1652	.03	1.3	512.981	172		89	252	265		65	3	
*Barometric Pressure is at port elevation			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m	O ₂ /CO ₂	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _m -std, scf
			.1873	1.3004	31.081	173.7	89.0	254/257	260/266	260/266	260/266	67	3	
			.03563	1.1402										



WESTON SOLUTIONS
Integrated Air Services

Comments _____

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

Leak Check, Pre-run _____
 Post-run _____

Flue Gas Composition
 Oxygen, % _____
 Carbon Dioxide, % _____
 Moisture, % _____

Q_s, dscfm
 % Isokinetic _____
 Calculated by _____
 QC by _____

15730.001.008
 Pump Driver, # Paper Machine,
 #2-3 SOTV's & #1-2 CBs
 Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 1 Hood Exhaust
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in **grams**

Run No. 1 Sample Date _____ Recovery Date _____

Sample ID _____ Filter ID N/A Analyst BEA/BE

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	<u>H₂O</u>	<u>H₂O</u>	<u>Empty</u>			
Final	<u>848.6</u>	<u>661.6</u>	<u>550.0</u>		<u>901.6</u>	
Initial	<u>752.4</u>	<u>635.8</u>	<u>546.2</u>	✓	<u>893.5</u>	
Gain	<u>96.2</u> ✓	<u>25.8</u> ✓	<u>3.8</u> ✓	<u>125.8</u>	<u>8.1</u>	<u>133.9</u>

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Run No. 2 Sample Date _____ Recovery Date _____

Sample ID _____ Filter ID N/A Analyst BEA/BE

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	<u>H₂O</u>	<u>H₂O</u>	<u>Empty</u>			
Final	<u>850.8</u>	<u>849.2</u>	<u>637.9</u>		<u>868.9</u>	
Initial	<u>745.0</u>	<u>804.1</u>	<u>628.0</u>		<u>857.8</u>	
Gain	<u>105.8</u> ✓	<u>45.1</u> ✓	<u>9.9</u> ✓		<u>11.1</u>	<u>171.9</u>

Impinger Color Clear Labeled? ✓
Silica Gel Condition Good Sealed? ✓

Run No. 3 Sample Date _____ Recovery Date _____

Sample ID _____ Filter ID N/A Analyst BEA/BE

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	<u>H₂O</u>	<u>H₂O</u>	<u>Empty</u>			
Final	<u>913.3</u>	<u>647.2</u>	<u>554.0</u>		<u>909.1</u>	
Initial	<u>784.0</u>	<u>630.1</u>	<u>550.0</u>	✓	<u>901.6</u>	
Gain	<u>129.3</u> ✓	<u>17.1</u> ✓	<u>4.0</u> ✓	<u>150.4</u>	<u>7.5</u>	<u>157.9</u>

Impinger Color _____ Labeled? ✓
Silica Gel Condition _____ Sealed? ✓

Check COC for Sample IDs of Media Blanks

SAMMI Hot Box

Nozzle Box

Ratchet Strap

Cooler + Water

	Delta P	Angle Angle	Temp
1.	.02	7	184 284 184
2.	.00	0	280 190
3.	.00	0	280 192
4.	.00	0	192
5.	-.02	6	193
6.	-.02	6	192
7.	.04	12	190
8.	.05	14	194
9.	.02	7	194
10.	.04	12	193
11.	.05	15	193
12.	.00	0	

450.135
.550

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vents**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
Paper Machine Vent 1 Run 1				
16:35:26	6778	20.2	0	0.2
16:35:41	6781	20.2	-2	0.2
16:35:56	6780	20.2	-2	0.2
16:36:11	6781	20.2	-1	0.2
16:36:26	6782	20.2	-4	0.2
16:36:41	6782	20.2	-3	0.2
16:36:56	6782	20.2	-5	0.2
16:37:11	6785	20.2	-4	0.2
16:37:26	6782	20.2	-4	0.2
16:37:41	6783	20.2	-4	0.2
16:37:56	6783	20.2	-5	0.2
16:38:11	6782	20.2	-2	0.2
16:38:26	6783	20.2	-4	0.2
16:38:41	6783	20.2	-3	0.2
16:38:56	6781	20.2	-2	0.2
Avgs	6782	20.2	-3	0.2

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vents**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
19:02:02	6782	20.2	-4	0.2
Paper Machine Vent 1 Run 2				
19:02:17	6781	20.2	-5	0.2
19:02:32	6778	20.2	-6	0.2
19:02:47	6781	20.2	-4	0.2
19:03:02	6782	20.2	-5	0.2
19:03:17	6781	20.2	-1	0.2
19:03:32	6781	20.2	-3	0.2
19:03:47	6780	20.2	-3	0.2
19:04:02	6780	20.2	-5	0.2
19:04:17	6781	20.2	-5	0.2
19:04:32	6777	20.2	-4	0.2
19:04:47	6781	20.2	-5	0.2
19:05:02	6780	20.2	-2	0.2
19:05:17	6780	20.2	-3	0.2
19:05:32	6778	20.2	-1	0.2
19:05:47	6762	20.2	12	0.2
Avg	6779	20.2	-3	0.2

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vents**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
19:06:16	6780	20.2	-1	0.2
Paper Machine Vent 1 Run 3				
19:06:31	6780	20.2	-2	0.2
19:06:46	6781	20.2	-2	0.2
19:07:01	6780	20.2	-2	0.2
19:07:16	6781	20.2	-2	0.2
19:07:31	6782	20.2	-2	0.2
19:07:46	6781	20.2	-2	0.2
19:08:01	6781	20.2	-2	0.2
19:08:16	6780	20.2	-3	0.2
19:08:31	6779	20.2	1	0.2
19:08:46	6780	20.2	1	0.2
19:09:01	6782	20.2	-0	0.2
19:09:16	6781	20.2	-0	0.2
19:09:31	6780	20.2	1	0.2
19:09:46	6781	20.2	2	0.2
19:10:01	6781	20.2	4	0.2
19:10:16	6781	20.2	1	0.2
19:10:31	6781	20.2	-1	0.2
19:10:46	6781	20.2	1	0.2
19:11:01	6779	20.2	1	0.2
19:11:16	6780	20.2	2	0.2
Avgs	6781	20.2	-0	0.2

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vents**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 13:37

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	46
10.1 ✓	SG9168283BAL	3296
19.5 ✓	CC454190	6582

Curve Coefficients

Slope	Intercept	Corr. Coeff.
335.0	3 ✓	0.9997 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-36
10.2 ✓	SG9168283BAL	3110
20.4 ✓	CC454190	6430

Curve Coefficients

Slope	Intercept	Corr. Coeff.
317.0	-61 ✓	0.9999 ✓

✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vents**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 13:37

O₂

Method: EPA 3A

Span Conc. 19.5 %

Slope 335.0

Intercept 2.5

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	46	0.1	0.1	0.5 ✓	Pass
10.1	3296	9.8	-0.3	-1.5 ✓	Pass
19.5	6582	19.6	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.4 %

Slope 317.0

Intercept -60.9

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-36	0.1	0.1	0.5 ✓	Pass
10.2	3110	10.0	-0.2	-1.0 ✓	Pass
20.4	6430	20.5	0.1	0.5 ✓	Pass

Handwritten signature

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **Paper Machine vents**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

File: C:\Users\Trailer 271\Documents\New Indy\6-23-21.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: DESKTOP-GQ0I9UV **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	19.5

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.4



APPENDIX E

FIELD DATA – NO. 2 AND 3

SMELT DISSOLVING TANK VENTS

New Indy
Catawba, SC

15730.001.008
No. 2 & 3 SDTV

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/27/21 ✓	6/27/21 ✓	6/27/21 ✓	---
Time Began	1100 ✓	1222 ✓	1344 ✓	---
Time Ended	1210 ✓	1331 ✓	1454 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	2.60E+04 ✓	2.61E+04 ✓	2.54E+04 ✓	2.58E+04
BWS	0.392 ✓	0.412 ✓	0.409 ✓	0.404
% Oxygen	20.1 ✓	20.0 ✓	20.3 ✓	20.1
Recovery, %	91.9	91.9	91.9	91.9
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	7.42 ✓	9.24 ✓	8.24 ✓	8.30
Emission Rate, lb/hr	1.02	1.28	1.11	1.14
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	5.56 ✓	6.99 ✓	6.43 ✓	6.33
Concentration, ppm (Corrected for Recovery)	6.05	7.61	7.00	6.88
Emission Rate, lb/hr	0.84	1.05	0.94	0.94

✓

New Indy
Catawba, SC

15730.001.008
No. 2 & 3 SDTV

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/27/21	6/27/21	6/27/21	---
Time Began	1100	1222	1344	---
Time Ended	1208	1332	1451	---

INPUT DATA

Sampling Time, min	(Theta)	64.0	64	64	64
Stack Diameter, in.	(Dia.)	71	71	71	71
Barometric Pressure, in. Hg	(Pb)	29.40	29.40	29.40	29.40
Static Pressure, in. H2O	(Pg)	-0.16	-0.16	-0.16	-0.16
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0000	1.0000	1.0000	1.0000
Orifice Calibration Value	(Delta H@)	2.0490	2.0490	2.0490	2.0490
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft ³	(Vm)	39.637	39.229	39.027	39.298
Meter Temperature, °F	(Tm)	103.3	101.8	98.8	101.3
Meter Temperature, °R	(Tm-R)	563.3	561.8	558.8	561.3
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	519.8	541.0	558.9	539.9
CO2 Concentration, %	(CO2)	0.0	0.0	0.0	0.0
O2 Concentration, %	(O2)	20.1	20.0	20.3	20.1
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	0.469	0.486	0.469	0.475
Stack Temperature, °F	(Ts)	167.5	170.1	169.4	169.0
Stack Temperature, °R	(Ts-R)	627.5	630.1	629.4	629.0
Moisture Fraction (at Saturation)	(BWS)	0.392	0.416	0.409	0.406

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	27.49	27.49	27.49	27.49
Stack Pressure, in. Hg	(Ps)	29.39	29.39	29.39	29.39
Meter Pressure, in. Hg	(Pm)	29.50	29.50	29.50	29.50
Standard Meter Volume, ft ³	(Vmstd)	36.615	36.331	36.342	36.429
Standard Water Volume, ft ³	(Vwstd)	24.467	25.465	26.307	25.413
Moisture Fraction (Measured)	(BWS)	0.401	0.412	0.420	0.411
Moisture Fraction (lower sat/meas)	(BWS)	0.392	0.412	0.409	0.404
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.80	28.80	28.81	28.81
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	24.57	24.35	24.39	24.44
Average Stack Gas Velocity, ft/sec	(Vs)	31.40	32.72	31.59	31.90
Stack Gas Flow, actual, ft ³ /min	(Qa)	51795	53982	52110	52629
Stack Gas Flow, Std, ft ³ /min	(Qs)	26017	26110	25364	25830
Calibration check	(Yqa)	1.0072	1.0165	1.0187	1.014
Percent difference from Y					1.41%

AB for SHV

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Ind
 Location/Plant Catawba, SC
 Source SDTV
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/27/21
 Test Personnel ATC/CL/BE
 Sample Time 64 min.

Console ID A025
 Meter Corr., Y 1.000
 Console ΔH@ 2.044
 Probe ID/Length 81
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A025
 Nozzle ID/Diams. .250 in.
 Avg. Nozzle Diam. .250 in.

Ambient Temp. 96 °F
 Baro. Pressure 29.50 in. Hg
 Static Pressure -16 in. H₂O
 Impinger Gain 509.5 mL
 Silica Gel Gain 10.3 g
 Stack Area 27.49 ft²
 Total Traverse Points 16

K Factor NA
 Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	8	5
Pitot	1,000	1,000

Filter ID NA
 Sample ID Run 1

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1 B	0	11:00			991.700	166			260	265		67	2.5	
2	4		.17	1.3	994.3	164		102	264	261		66	2.5	
3	8		.18	1.3	996.6	164		103	265	260		66	2.5	
4	12		.19	1.3	998.7	163		104	265	262		65	3	
5	16		.20	1.3	1001.7	164		104	264	262		65	3	
6	20		.24	1.3	1004.1	166		104	263	268		63	3	
7	24		.26	1.3	1006.6	167		103	264	267		61	3	
8	28		.24	1.3	1009.1	169		103	263	265		60	3	
1 A	32	11:32	.21	1.3	1011.5	169		103	263	263		65	3	
2	36	11:36	.23	1.3	1014.1	170		103	265	262		58	3	
3	40		.23	1.3	1017.1	170		104	264	267		58	4	tend
4	44		.23	1.3	1018.9	171		103	252	264		59	4	volume
5	48		.24	1.3	1021.3	170		103	253	261		59	4	
6	52		.22	1.3	1023.9	170		104	254	265		63	4	1031.337
7	56		.22	1.3	1026.5	169		104	252	263		61	4	
8	60		.23	1.3	1028.8	169		103.25	247.65	266.68		67	4	
8	64	12:08	.23	1.3	1031.9	169		103.25	247.65	266.68		67	4	

*Barometric Pressure is at port elevation

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run _____
 Post-run _____

Flue Gas Composition
 Oxygen, % _____
 Carbon Dioxide, % _____
 Moisture, % _____

Comments _____



15730.001.008
 Pulp Dyer #3 Paper Machine,
 #2-3 SDTV's, & #1-2 CBs
 Emission Report
 QC by AW
 Result _____

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client	New Indy	Console ID	A025	Ambient Temp.	40 °F
Location/Plant	Catawba, SC	Meter Corr., Y	1.006	Baro. Pressure*	29.46 in. Hg
Source	SDTV	Console ΔH@	2.049	Static Pressure	-16 in. H ₂ O
Sample Location	4th water	Probe ID/Length	PR8L 4'	Impinger Gain	526.5 mL 541
W. O. Number	15730.001.008	Liner Material	33	Silica Gel Gain	14.5 g
Run Number	2	Pitot ID/Coeff.	P320 0.84		
Date	6/27/21	Thermo ID	A025	Stack Area	27.49 ft ²
Test Personnel	AR/CL/BE	Nozzle ID/Diams.	236 1.236		
Sample Time	64 min.	Avg. Nozzle Diam.	230 in.	Total Traverse Points	16

K Factor	NA
----------	----

Leak Checks

	Initial	Final
Volume, ft ³		
@ Vac., in. Hg	8	1003
Pitot	1000	1000

Filter ID NA
Sample ID Run 2

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM IN/ET TEMP (°F)	DGM OUTET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	12:22			31.660									
	4		.22	1.3	33.8	167		104	246	262		66	3	
2	8		.23	1.3	36.5	170		104	248	263		57	3	
3	12		.23	1.3	39.0	173		104	249	264		55	3	
4	16		.25	1.3	42.1	170		104	250	265		55	3.5	
5	20		.25	1.3	44.3	172		105	251	264		56	3.5	
6	24		.25	1.3	46.5	173		105	250	263		58	3.5	
7	28		.27	1.3	49.6	175		105	251	267		58	3.5	
8	32	12:54	.25	1.3	51.3	173		104	250	266		61	4	
B-1	36	13:00	.20	1.3	53.7	170		106	238	265		65	4	
2	40		.20	1.3	56.3	170		101	258	264		64	4	
3	44		.20	1.3	58.7	171		106	254	268		63	4	
4	48		.23	1.3	61.1	168		96	260	267		63	4	
5	52		.25	1.3	63.8	169		97	258	266		64	4.5	
6	56		.26	1.3	65.9	167		98	259	265		64	4.5	
7	60		.25	1.3	68.4	167		101	234	264		65	5	
8	64	13:32	.24	1.3	70.829	167		101	238	264		66	5	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	
			1.48556	1.3	34.224	176.12	101.81		246/254	262/268		66	5	

Thermocouple Check	Q _s , dscfm
Meter Temp., °F	% Isokinetic
Ref. Temp., °F	Calculated by
Result	QC by

O ₂ /CO ₂ by Orsat	Fyrite M3A
Leak Check, Pre-run	Post-run

Flue Gas Composition
Oxygen, %
Carbon Dioxide, %
Moisture, %

Comments



Integrated Air Services

DW SCDHEC
6/27

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source SDTV
 Sample Location stack outlet
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/27/21
 Test Personnel ATN/LL/BE
 Sample Time 64 min.

Console ID A025
 Meter Corr., Y 1.006
 Console ΔH@ 2.644
 Probe ID/Length P08L 8'
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A025
 Nozzle ID/Diams. 0.250
 Avg. Nozzle Diam. 0.250 in.

Ambient Temp. 45 °F
 Baro. Pressure* 29.40 in. Hg
 Static Pressure -10 in. H₂O
 Impinger Gain 548.9 mL
 Silica Gel Gain 613 g
 Stack Area 27.44 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>0.07</u>	<u>0.03</u>
Pitot	<u>0.03</u>	<u>0.03</u>

Filter ID NA

Sample ID RUN 3

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TFMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1	0	13:44			71.106									
	4		.14	1.3	73.8	167		98	256	257		64	4	
	8		.14	1.3	76.2	170		94	257	234		62	4	
	12		.20	1.3	78.9	170		97	256	261		55	4	
	16		.22	1.3	81.6	176		97	257	260		56	4	
	20		.23	1.3	83.2	170		98	236	266		56	4	
	24		.23	1.3	83.7	169		98	235	261		58	4	
	28		.24	1.3	88.5	169		97	234	260		58	4	
	32	14:16	.23	1.3	90.6	170		98	233	261		60	4.5	
B-1	36	14:19	.23	1.3	93.3	169		94	234	262		65	4.5	
	40		.22	1.3	95.5	169		94	235	263		61	4.5	
	44		.22	1.3	98.9	169		101	236	262		60	4.5	
	48		.24	1.3	100.9	176		100	257	261		64	4.5	
	52		.23	1.3	102.9	170		101	238	262		64	5	
	56		.22	1.3	105.1	171		100	236	263		65	5	
	60		.22	1.3	107.8	169		99	235	264		65	5.5	
	64	14:51	.22	1.3	110.127	169		94	236	263		65	5.5	
*Barometric Pressure is at port elevation			Avg VAP .4644	Avg ΔH 1.3	Total Volume 139.027	Avg T _m 169.4	Avg T _m 99.25	Min/Max 253/258	Min/Max 257/264	Min/Max 257/264	Min/Max 65/65	Max Temp 65	Max Vac 5.5	V _{m-std} scf

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

Leak Check, Pre-run _____
 Post-run _____

O₂/CO₂ by Orsat Fyrite M3A _____
 Leak Check, Pre-run _____
 Post-run _____

Flue Gas Composition
 Oxygen, % _____
 Carbon Dioxide, % _____
 Moisture, % _____

Comments _____

QC by _____



DUPLICATE 6/27

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source SDTV
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/27/21 Recovery Date 6/27/21
Sample ID Run 1 Filter ID NA Analyst ATR

	Impingers				Imp.Total	Silica Gel grams	Total
	1	2	3	4			
Contents	DI	DI	empty	empty			
Final	918.4	1622.6	707.8	608.2		933.3	
Initial	711.1	783.9	646.4	665.6	✓	923.0	
Gain	207.3 ✓	238.7 ✓	60.4 ✓	2.6 ✓	509.5	10.3	519.8

Impinger Color clear Labeled? —
Silica Gel Condition used Sealed? —

Run No. 2 Sample Date 6/27/21 Recovery Date 6/27/21
Sample ID Run 2 Filter ID NA Analyst ATR

	Impingers				Imp.Total	Silica Gel grams	Total
	1	2	3	4			
Contents	DI	DI	empty	empty			
Final	981.4	1014.7	736.6	668.6		855.7	
Initial	774.0	779.7	644.9	665.2	✓	841.2	
Gain	207.4 ✓	235 ✓	80.7 ✓	3.4 ✓	526.5	14.5	541 ✓

Impinger Color clear Labeled? —
Silica Gel Condition used Sealed? —

Run No. 3 Sample Date 6/27/21 Recovery Date 6/27/21
Sample ID Run 3 Filter ID NA Analyst ATR

	Impingers				Imp.Total	Silica Gel grams	Total
	1	2	3	4			
Contents	DI	DI	empty	empty			
Final	923.0	973.1	714.3	585.9	AB 613W ✓	909.6	
Initial	663.4	758.0	643.0	593.3	548.6	899.3	
Gain	259.6 ✓	215.1 ✓	71.3 ✓	2.6 ✓	548.9	10.3	559.2

Impinger Color clear Labeled? — 2.6 AB 613W ✓
Silica Gel Condition used Sealed? — 558.9 ✓ AB 613W ✓

Check COC for Sample IDs of Media Blanks

WESTON
SOLUTIONS
Integrated Air Services

Sample and Velocity Traverse Points - Method 1

Client New-Indy
Location/Plant Catawba, SC
Operator JWS/JW

Source SDTV 2 & 3
W.O. Number 15730.001.001
Date 3/27/2019

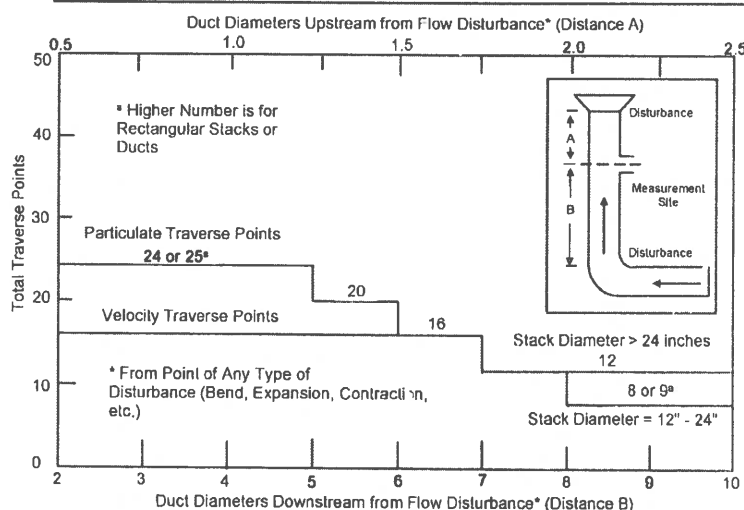
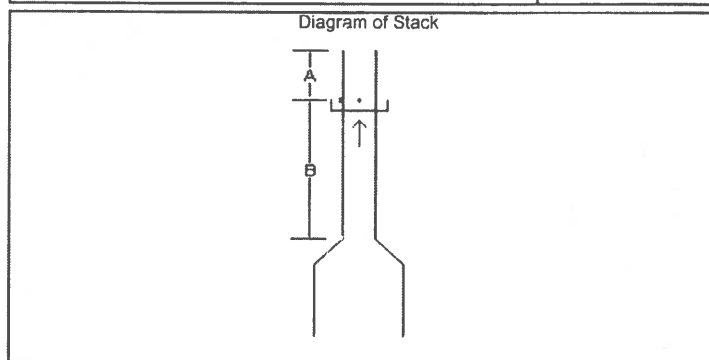
Duct Type ☒ Circular ☐ Rectangular
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse ☐ Stratification Traverse

Depth, far wall to outside of port (in) = C	77.75
Port Depth (in) = D	6.75
Depth of Duct, diameter (in) = C - D	71
Area of Duct (ft ²)	27.49
Number of Ports	2
Traverse Points per Port	8
Total Traverse Points	16

Rectangular Ducts Only	
Width of Duct (in)	
Equivalent Diameter (in)	

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2.3	9.0
2	10.5	7.4	14.2
3	19.4	13.8	20.5
4	32.3	22.9	29.7
5	67.7	48.1	54.8
6	80.6	57.2	64.0
7	89.5	63.6	70.3
8	96.8	68.7	75.5

Flow Disturbances	
Upstream - A (ft)	10
Downstream - B (ft)	38
Upstream - A (duct diameters)	1.7
Downstream - B (duct diameters)	6.4



Traverse Point Location % of Stack - Circular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25.0		14.6		10.5		8.2		6.7
3				75.0		29.6		19.4		14.6		11.8
4				93.3		70.4		32.3		22.6		17.7
5						85.4		67.7		34.2		25.0
6						95.6		80.6		65.8		35.8
7								89.5		77.4		64.4
8								96.8		85.4		75.0
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Traverse Point Location % of Stack - Rectangular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular Stack Points & Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Tape measure ID _____

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Start Time 11:00 End Time 12:10

Average Measured TRS Conc.

Recovery No. 2

TRS Corrected for Recovery

~~6.79~~ 6.82

6.76 ppm

91.9 %

~~7.36~~ ppm

4.39 7.42

AB
9129 ✓

AB
9115 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Start Time 12:22 End Time 13:31

Average Measured TRS Conc.

Recovery No. 2

TRS Corrected for Recovery

8.49
~~8.48~~ ppm
91.9 %
~~9.23~~ ppm
9.24

AB
91.2% ✓

AM

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Start Time 13:44 End Time 14:54

Average Measured TRS Conc.

Recovery No. 2

TRS Corrected for Recovery

~~7.55~~ 7.57

7.54 ppm

91.9 %

8.20 ppm

~~8.22~~
8.24

AS
9129

AS
9115 ✓

RUN DATA

Number 1

Client: New Indy
 Location: Catawba, NC
 Source: 2 & 3 SDTV

Project Number: 15730.001.008
 Operator: VD
 Date: 27 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S		MeSH		DMS		DMDS		TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	ppm
11:00	9746	6.75	<	7	0.83	<	3	0.04	<	7.74
11:03	10033	6.85	<	101	0.95	<	5	0.06	<	8.00
11:06	9112	6.51	<	107	0.97	<	3	0.05	<	7.65
11:09	7501	5.87	<	115	1.01	<	5	0.06	<	7.07
11:12	5842	5.14	<	115	1.01	<	5	0.06	<	6.35
11:15	5372	4.91	<	117	1.02	<	5	0.06	<	6.14
11:18	4418	4.43	<	105	0.96	<	5	0.06	<	5.59
11:21	4580	4.51	<	110	0.99	<	3	0.04	<	5.67
11:24	4551	4.50	<	111	0.99	<	5	0.06	<	5.68
11:27	4210	4.31	<	99	0.94	<	3	0.05	<	5.43
Paused for Port Change										
11:40	4222	4.32	<	107	0.97	<	4	0.05	<	5.48
11:43	5768	5.10	<	113	1.01	<	4	0.05	<	6.30
11:46	5698	5.07	<	122	1.04	<	6	0.07	<	6.40
11:49	6812	5.57	<	138	1.12	<	5	0.06	<	6.89
11:52	7585	5.90	<	155	1.19	<	6	0.06	<	7.29
11:55	8396	6.23	<	162	1.21	<	5	0.06	<	7.63
11:58	8694	6.35	<	166	1.23	<	6	0.06	<	7.78
12:01	9023	6.47	<	173	1.25	<	6	0.06	<	7.93
12:04	9097	6.50	<	169	1.24	<	7	0.07	<	7.96
12:07	7770	5.98	<	165	1.23	<	6	0.06	<	7.41
Averages		5.56								6.82

17.38931

RUN DATA

Number 2

Client: New Indy
 Location: Catawba, NC
 Source: 2 & 3 SDTV

Method: 16
 Calibration: 1

Project Number: 15730.001.008
 Operator: VD
 Date: 27 Jun 2021

Time	H ₂ S		MeSH		DMS		DMDS		TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	ppm
12:22	5222	4.84		5	1.17		2	0.09		6.21
12:25	7380	5.82		164	1.22		3	0.09		7.24
12:28	8350	6.21		193	1.33		3	0.10		7.73
12:31	11724	7.44		192	1.32		4	0.11		8.99
12:34	13839	8.13		213	1.40		5	0.12		9.79
12:37	13568	8.04		206	1.37		3	0.10		9.66
12:40	10733	7.10		199	1.35		4	0.11		8.69
12:43	10057	6.86		192	1.32		3	0.10		8.39
12:46	13409	7.99		207	1.38		4	0.12		9.63
12:49	13864	8.14		220	1.42		4	0.12		9.82
Paused for Port Change										
13:01	18795	9.57		181	1.28		3	0.10		11.09
13:04	16648	8.97		173	1.25		4	0.12		10.47
13:07	14072	8.20		190	1.32		3	0.10		9.75
13:10	10289	6.94		155	1.18		4	0.11		8.34
13:13	9917	6.81		167	1.23		3	0.10		8.28
13:16	9314	6.58		170	1.24		<2		0.078	8.01
13:19	7425	5.84		158	1.20		4	0.12		7.27
13:22	6575	5.47		152	1.17		4	0.11		6.83
13:25	6676	5.51		153	1.17		3	0.10		6.91
13:28	6242	5.32		149	1.16		<2		0.078	6.68
Averages		6.99								8.49

18.26409

RUN DATA

Number 3

Client: **New Indy** Project Number: **15730.001.008**
Location: **Catawba, NC** Method: **16** Operator: **VD**
Source: **2 & 3 SDTV** Calibration: **1** Date: **27 Jun 2021**

Time	H ₂ S			MeSH			DMS			DMSD			TRS	
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	ppm	ppm
13:44	6773	5.56		6	1.14		3	0.09		5	0.06		6.91	
13:47	7079	5.69		149	1.16		<2			5	0.06	0.078	7.05	
13:50	8284	6.19		161	1.21		<2			5	0.06	0.078	7.59	
13:53	9347	6.60		157	1.19		3	0.10		5	0.06		8.00	
13:56	11430	7.34		154	1.18		<2			4	0.05	0.078	8.70	
13:59	11137	7.24		81	0.84		3	0.09		6	0.06		8.30	
14:02	9753	6.75		84	0.86		3	0.09		5	0.06		7.82	
14:05	12285	7.63		74	0.80		2	0.08		6	0.06		8.64	
14:08	10527	7.03		77	0.82		3	0.10		4	0.06		8.06	
14:11	10419	6.99		72	0.80		<2			4	0.05	0.078	7.96	
Paused for Port Change														
14:24	4752	4.60		52	0.67		<2			2	0.04	0.078	5.43	
14:27	6627	5.49		51	0.66		<2			5	0.06	0.078	6.35	
14:30	7671	5.94		56	0.69		3	0.10		4	0.05		6.84	
14:33	7875	6.02		111	0.99		<2			5	0.06	0.078	7.21	
14:36	9158	6.53		60	0.72		3	0.10		4	0.05		7.45	
14:39	9894	6.80		134	1.10		<2			5	0.06	0.078	8.09	
14:42	9132	6.52		118	1.03		2	0.09		5	0.06		7.75	
14:45	8684	6.34		114	1.01		5	0.13		4	0.06		7.60	
14:48	8526	6.28		124	1.05		2	0.08		6	0.06		7.54	
14:51	10818	7.13		68	0.77		<2			7	0.07	0.078	8.13	
Averages		6.43											7.57	

RUN DATA

Number 1

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
11:00	9746	6.75	79	0.83	<2	<0.078	3	0.04	7.67
11:03	10033	6.85	101	0.95	<2	<0.078	5	0.06	7.92
11:06	9112	6.51	107	0.97	<2	<0.078	3	0.05	7.58
11:09	7501	5.87	115	1.01	<2	<0.078	5	0.06	6.99
11:12	5842	5.14	115	1.01	<2	<0.078	5	0.06	6.27
11:15	5372	4.91	117	1.02	3	0.09	5	0.06	6.14
11:18	4418	4.43	105	0.96	2	0.08	5	0.06	5.59
11:21	4580	4.51	110	0.99	<2	<0.078	3	0.04	5.59
11:24	4551	4.50	111	0.99	<2	<0.078	5	0.06	5.61
11:27	4210	4.31	99	0.94	3	0.09	3	0.05	5.43
Paused for Port Change									
11:40	4222	4.32	107	0.97	<2	<0.078	4	0.05	5.40
11:43	5768	5.10	113	1.01	<2	<0.078	4	0.05	6.22
11:46	5698	5.07	122	1.04	7	0.16	6	0.07	6.40
11:49	6812	5.57	138	1.12	<2	<0.078	5	0.06	6.81
11:52	7585	5.90	155	1.19	<2	<0.078	6	0.06	7.21
11:55	8396	6.23	162	1.21	<2	<0.078	5	0.06	7.56
11:58	8694	6.35	166	1.23	<2	<0.078	6	0.06	7.70
12:01	9023	6.47	173	1.25	<2	<0.078	6	0.06	7.86
12:04	9097	6.50	169	1.24	<2	<0.078	7	0.07	7.89
12:07	7770	5.98	165	1.23	<2	<0.078	6	0.06	7.33
Average									
		5.56			1.06	<0.078			0.06
									6.76

32

RUN DATA

Number 2

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
12:22	5222	4.84	150	1.17	2	0.09	5	0.06	6.21
12:25	7380	5.82	164	1.22	3	0.09	5	0.06	7.24
12:28	8350	6.21	193	1.33	3	0.10	3	0.05	7.73
12:31	11724	7.44	192	1.32	4	0.11	5	0.06	8.99
12:34	13839	8.13	213	1.40	5	0.12	7	0.07	9.79
12:37	13568	8.04	206	1.37	3	0.10	7	0.07	9.66
12:40	10733	7.10	199	1.35	4	0.11	6	0.07	8.69
12:43	10057	6.86	192	1.32	3	0.10	4	0.05	8.39
12:46	13409	7.99	207	1.38	4	0.12	7	0.07	9.63
12:49	13864	8.14	220	1.42	4	0.12	7	0.07	9.82
Paused for Port Change									
13:01	18795	9.57	181	1.28	3	0.10	7	0.07	11.1
13:04	16648	8.97	173	1.25	4	0.12	6	0.06	10.5
13:07	14072	8.20	190	1.32	3	0.10	6	0.06	9.75
13:10	10289	6.94	155	1.18	4	0.11	4	0.05	8.34
13:13	9917	6.81	167	1.23	3	0.10	7	0.07	8.28
13:16	9314	6.58	170	1.24	<2	<0.078	4	0.05	7.93
13:19	7425	5.84	158	1.20	4	0.12	5	0.06	7.27
13:22	6575	5.47	152	1.17	4	0.11	2	0.04	6.83
13:25	6676	5.51	153	1.17	3	0.10	5	0.06	6.91
13:28	6242	5.32	149	1.16	<2	<0.078	5	0.06	6.60
Average		6.99	1.28		0.10		0.06		8.48

RUN DATA

Number 3

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
13:44	6773	5.56	145	1.14	3	0.09	5	0.06	6.91
13:47	7079	5.69	149	1.16	<2	<0.078	5	0.06	6.97
13:50	8284	6.19	161	1.21	<2	<0.078	5	0.06	7.52
13:53	9347	6.60	157	1.19	3	0.10	5	0.06	8.00
13:56	11430	7.34	154	1.18	<2	<0.078	4	0.05	8.62
13:59	11137	7.24	81	0.84	3	0.09	6	0.06	8.30
14:02	9753	6.75	84	0.86	3	0.09	5	0.06	7.82
14:05	12285	7.63	74	0.80	2	0.08	6	0.06	8.64
14:08	10527	7.03	77	0.82	3	0.10	4	0.06	8.06
14:11	10419	6.99	72	0.80	<2	<0.078	4	0.05	7.89
Paused for Port Change									
14:24	4752	4.60	52	0.67	<2	<0.078	2	0.04	5.35
14:27	6627	5.49	51	0.66	<2	<0.078	5	0.06	6.27
14:30	7671	5.94	56	0.69	3	0.10	4	0.05	6.84
14:33	7875	6.02	111	0.99	<2	<0.078	5	0.06	7.13
14:36	9158	6.53	60	0.72	3	0.10	4	0.05	7.45
14:39	9894	6.80	134	1.10	<2	<0.078	5	0.06	8.01
14:42	9132	6.52	118	1.03	2	0.09	5	0.06	7.75
14:45	8684	6.34	114	1.01	5	0.13	4	0.06	7.60
14:48	8526	6.28	124	1.05	2	0.08	6	0.06	7.54
14:51	10818	7.13	68	0.77	<2	<0.078	7	0.07	8.05
Average		6.43	0.94		<0.078		0.06		7.54

RUN DATA

Number 0

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS ppm
	area	ppm	area	ppm	area	ppm	area	ppm	
CC416806 7.257 ppm ✓									
16:31	12652	7.69	<2	<0.12	<2	<0.078	<2	<0.036	7.69
16:34	13142	7.85	<2	<0.12	<2	<0.078	<2	<0.036	7.85
16:37	13429	7.94	<2	<0.12	<2	<0.078	<2	<0.036	7.94
Average		7.83	<0.12		<0.078		<0.036		7.83 ✓

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Before Run 1

Start Time 09:25 End Time 09:39

Recovery Gas to Probe, Time 09:25

Peak Areas, mv-sec			Average	ppm
11108	11283	11482	11291 ✓	7.30

Recovery Gas to GC, Time 09:37

Peak Areas, mv-sec			Average	ppm
13285	13216	13267	13256 ✓	7.95

Recovery 91.8% ✓

✓

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

After Run 3 Before Run 4
Start Time 14:56 End Time 15:17

Recovery Gas to Probe, Time 14:56

Peak Areas, mv-sec			Average	ppm
11388	11667	11619	11558 ✓	7.39

Recovery Gas to GC, Time 15:13

Peak Areas, mv-sec			Average	ppm
13585	13587	13493	13555 ✓	8.04

Recovery 91.9% ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Ambient Temperature: 72°C

Barometric Pressure: 29.70 in. Hg

Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	363	470	238
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 37.1 mL/Min **9.32 ppm** **9.79 ppm** **12.7 ppm** **6.41 ppm**

Time: 07:00

Peak Areas, mv-sec

17531	8727	27825	33485
17951	8703	27443	33712
18066	8758	27669	33342
17849	8730	27646	33513

2 Flow = 78.5 mL/Min **4.41 ppm** **4.63 ppm** **5.99 ppm** **3.03 ppm**

Time: 08:24

Peak Areas, mv-sec

4366	2153	6888	8191
4464	2149	6729	8050
4361	2131	6827	8110
4397	2145	6815	8117

3 Flow = 172 mL/Min **2.01 ppm** **2.11 ppm** **2.73 ppm** **1.38 ppm**

Time: 08:47

Peak Areas, mv-sec

1026	464	1561	1864
980	466	1558	1873
996	463	1569	1872
1001	464	1563	1870

Handwritten signature

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Method **16**

H₂S	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.32	4.41	2.01		
Area, mv-sec	17849	4397	1001		
Calc. Conc., ppm	9.31	4.42	2.01		
% Error	-0.1	0.2	-0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8784	2.4316	>0.9999	2	0.073
MeSH	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.79	4.63	2.11		
Area, mv-sec	8730	2145	464		
Calc. Conc., ppm	9.74	4.68	2.10		
% Error	-0.5	1.0	-0.5		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9131	2.0496	0.9999	2	0.12
DMS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	12.7	5.99	2.73		
Area, mv-sec	27646	6815	1563		
Calc. Conc., ppm	12.7	6.00	2.73		
% Error	-0.1	0.1	-0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8729	2.3765	>0.9999	2	0.078
DMDS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	6.41	3.03	1.38		
Area, mv-sec	33513	8117	1870		
Calc. Conc., ppm	6.42	3.02	1.38		
% Error	0.1	-0.3	0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8815	3.0064	>0.9999	2	0.036

2

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Method **16**

Ambient Temperature: 72°C

Barometric Pressure: 29.45 in. Hg

Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	349	366	474	240
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 35.7 mL/Min 9.77 ppm 10.3 ppm 13.3 ppm 6.71 ppm

Time: 15:25 Peak Areas, mv-sec

19473	9508	30148	36336
19160	9600	30169	36878
19488	9629	30467	36382

Average Area 19374 9579 30261 36532

2 Flow = 76.0 mL/Min 4.59 ppm 4.82 ppm 6.24 ppm 3.15 ppm

Time: 15:41 Peak Areas, mv-sec

4986	2412	7781	9320
5080	2405	7724	9106
5033	2355	7680	9257

Average Area 5033 2391 7728 9228

3 Flow = 170 mL/Min 2.06 ppm 2.16 ppm 2.80 ppm 1.41 ppm

Time: 16:10 Peak Areas, mv-sec

1092	517	1666	1995
1079	522	1692	1998
1108	504	1661	1964

Average Area 1093 514 1673 1986

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Method **16**

H ₂ S	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	9.77	4.59	2.06		
Area, mv-sec	19374	5033	1093		
Calc. Conc., ppm	9.68	4.67	2.04		
% Error	-0.9	1.7	-0.8		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8461	2.4668	0.9998	2	0.067
MeSH	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	10.3	4.82	2.16		
Area, mv-sec	9579	2391	514		
Calc. Conc., ppm	10.2	4.87	2.15		
% Error	-0.6	1.1	-0.5		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8776	2.0870	0.9999	2	0.11
DMS	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	13.3	6.24	2.80		
Area, mv-sec	30261	7728	1673		
Calc. Conc., ppm	13.2	6.33	2.78		
% Error	-0.7	1.4	-0.7		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8592	2.3984	0.9999	2	0.074
DMDS	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	6.71	3.15	1.41		
Area, mv-sec	36532	9228	1986		
Calc. Conc., ppm	6.67	3.20	1.41		
% Error	-0.7	1.3	-0.6		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8700	3.0217	0.9999	2	0.035

ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483	716	1197	918
Permeation Rate, nL/min*	349	366	474	240

Barometric Pressure: 29.45 in. Hg Ambient Temperature: 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.45) \\ = 349 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **2 & 3 SDTV**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

File: C:\Data\210627 New Indy Catawba SDTV.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press.	Flow		
	psi	mL/min		
H ₂	30	50	Column: 140	Primary: Carbopack
Air	30	60	Detector: 140	Secondary: N/A
Carrier	50	30		Sample Loop: 4"

Injection Cycle

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.45 in. Hg

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 & 3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Calibration 1

Time	O ₂		CO ₂	
	mv	%	mv	%
12:12:06	6857	20.1	-5	0.0
12:12:16	6859	20.1	-5	0.0
12:12:26	6858	20.1	-7	0.0
12:12:36	6858	20.1	-8	0.0
12:12:46	6858	20.1	-8	0.0
12:12:56	6859	20.1	-8	0.0
12:13:06	6859	20.1	-6	0.0
12:13:16	6858	20.1	-5	0.0
12:13:26	6859	20.1	-5	0.0
12:13:36	6859	20.1	-5	0.0
12:13:46	6858	20.1	-6	0.0
12:13:56	6856	20.1	-7	0.0
Avg	6858	20.1	-6	0.0

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 &3 SDTV**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Time	O ₂		CO ₂	
	mv	%	mv	%
13:35:44	6803	20.0	-5	0.0
13:35:54	6804	20.0	-5	0.0
13:36:04	6804	20.0	-6	0.0
13:36:14	6802	20.0	-8	0.0
13:36:24	6803	20.0	-8	0.0
13:36:34	6804	20.0	-8	0.0
13:36:44	6803	20.0	-6	0.0
13:36:54	6805	20.0	-5	0.0
13:37:04	6802	20.0	-5	0.0
13:37:14	6803	20.0	-5	0.0
13:37:24	6807	20.0	-5	0.0
13:37:34	6946	20.4	-8	0.0
Avg	6816	20.0	-6	0.0

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 &3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Calibration 1

Time	O ₂		CO ₂	
	mv	%	mv	%
14:57:38	6920	20.3	-8	0.0
14:57:48	6922	20.3	-6	0.0
14:57:58	6921	20.3	-5	0.0
14:58:08	6920	20.3	-6	0.0
14:58:18	6920	20.3	-5	0.0
14:58:28	6919	20.3	-7	0.0
14:58:38	6918	20.3	-8	0.0
14:58:48	6920	20.3	-8	0.0
14:58:58	6920	20.3	-8	0.0
14:59:08	6918	20.3	-6	0.0
14:59:18	6918	20.3	-5	0.0
14:59:28	6920	20.3	-5	0.0
Avgs	6920	20.3	-6	0.0

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 &3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Start Time: 10:20

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-2
10.1 ✓	XC013544B	3438
20.2 ✓	CC275468	6897

Curve Coefficients

Slope	Intercept	Corr. Coeff.
340.9	-7 ✓	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-8
10.2 ✓	XC013544B	4174
20.3 ✓	CC275468	8060

Curve Coefficients

Slope	Intercept	Corr. Coeff.
398.0	38 ✓	0.9998 ✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 & 3 SDTV**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Start Time: 10:20

O₂

Method: EPA 3A

Span Conc. 20.2 %

Slope 340.9

Intercept -7.4

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-2	0.0	0.0	0.0 ✓	Pass
10.1	3438	10.1	0.0	0.0 ✓	Pass
20.2	6897	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.3 %

Slope 398.0

Intercept 37.9

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-8	-0.1	-0.1	-0.5 ✓	Pass
10.2	4174	10.4	0.2	1.0 ✓	Pass
20.3	8060	20.2	-0.1	-0.5 ✓	Pass

W

CALIBRATION ERROR DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 & 3 SDTV**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

Start Time: 15:13

O₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 340.9 Intercept -7.4

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-2	0.0	0.0	0.0 ✓	Pass
10.1	3438	10.1	0.0	0.0 ✓	Pass
20.2	6897	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Slope 398.0 Intercept 37.9

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-8	-0.1	-0.1	-0.5 ✓	Pass
10.2	4174	10.4	0.2	1.0 ✓	Pass
20.3	8060	20.2	-0.1	-0.5 ✓	Pass

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **2 &3 SDTV**

Project Number: **15730.001.008**
Operator: **VD**
Date: **27 Jun 2021**

File: C:\Data\210627 New Indy Catawba SDTV.com
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: WSAUBCHEMLABGC1 **Trailer:** 281
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.3



APPENDIX F FIELD DATA – NO. 1 AND 2 COMBINATION BOILERS



APPENDIX F

No. 1 COMBINATION BOILER (CONDITION 1: NCG AND SOG GASES)

New Indy
Catawba, SC

15730.001.008
No. 1 Combination Boiler
Condition 1: NCGs & SOGs

EMISSION CALCULATIONS

	Run 1 6/23/21	Run 2 6/23/21	Run 3 6/23/21	Mean
Date	6/23/21	6/23/21	6/23/21	---
Time Began	1158	1400	1541	---
Time Ended	1258	1500	1641	---
Volumetric Flow Rate, (Qs), DSCFM	1.35E+05	1.31E+05	1.33E+05	1.33E+05
BWS	0.174	0.177	0.160	0.170
% Oxygen	12.1	11.4	12.0	11.8
Recovery, %	86.2	86.2	86.2	86.2
<hr/>				
Sulfur Dioxide	MW= 64.06			
Concentration, ppm	195.0	278.0	344.0	272.3
Emission Rate, lb/hr	262.7	362.5	457.4	360.9
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	1.09	1.07	1.03	1.06
Emission Rate, lb/hr	0.78	0.74	0.73	0.75
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.08	0.07	0.10	0.08
Concentration, ppm (Corrected for Recovery)	0.09	0.08	0.12	0.10
Emission Rate, lb/hr	0.07	0.06	0.08	0.07

New Indy
Catawba, SC

15730.001.008

No. 1 Combination Boiler

Condition 1: NCGs & SOGs

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/23/21 ✓	6/23/21 ✓	6/23/21 ✓	---
Time Began	1158 ✓	1400 ✓	1541 ✓	---
Time Ended	1326 ✓	1525 ✓	1710 ✓	---

INPUT DATA

Sampling Time, min	(Theta)	64.0 ✓	64 ✓	64 ✓	64
Stack Diameter, in.	(Dia.)	120.00 ✓	120.00 ✓	120.00 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.45 ✓	29.45 ✓	29.45 ✓	29.45
Static Pressure, in. H2O	(Pg)	-0.64 ✓	-0.66 ✓	-0.65 ✓	-0.65
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	0.9880 ✓	0.9880 ✓	0.9880 ✓	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 ✓	1.7320 ✓	1.7320 ✓	1.7320
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	41.974 ✓	42.371 ✓	42.570 ✓	42.305
Meter Temperature, °F	(Tm)	88.0 ✓	92.5 ✓	97.3 ✓	92.6
Meter Temperature, °R	(Tm-R)	548.0	552.5	557.3	552.6
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2})avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	176.5 ✓	179.9 ✓	159.3 ✓	171.9
CO2 Concentration, %	(CO2)	7.8 ✓	8.4 ✓	7.7 ✓	8.0
O2 Concentration, %	(O2)	12.1 ✓	11.4 ✓	12.0 ✓	11.8
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2})avg)	0.786 ✓	0.765 ✓	0.765 ✓	0.772
Stack Temperature, °F	(Ts)	414.6 ✓	418.3 ✓	415.3 ✓	416.1
Stack Temperature, °R	(Ts-R)	874.6	878.3	875.3	876.1

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	78.54 ✓	78.54 ✓	78.54 ✓	78.54
Stack Pressure, in. Hg	(Ps)	29.40	29.40	29.40	29.40
Meter Pressure, in. Hg	(Pm)	29.55	29.55	29.55	29.55
Standard Meter Volume, ft ³	(Vmstd)	39.441	39.490	39.333	39.421
Standard Water Volume, ft ³	(Vwstd)	8.308	8.468	7.498	8.091
Moisture Fraction (Measured)	(BWS)	0.174	0.177	0.160	0.170
Moisture Fraction (lower sat/meas)	(BWS)	0.174	0.177	0.160	0.170
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.73	29.80	29.71	29.75
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.69	27.72	27.84	27.75
Average Stack Gas Velocity, ft/sec	(Vs)	58.52	57.06	56.84	57.47
Stack Gas Flow, actual, ft ³ /min	(Qa)	275752	268902	267850	270835
Stack Gas Flow, Std, ft ³ /min	(Qs)	135073	130750	133309	133044

Calibration check	(Yqa)	1.0034	0.9969	0.9980	0.999
Percent difference from Y					1.16%

Method: EPA 4, Moisture

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[illegible]368

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 1 Combination Boiler
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/23/21
 Test Personnel ML/LC
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y 1.986
 Console ΔH@ 1.732
 Probe ID/Length PR33B 1.51
 Liner Material SS
 Pitot ID/Coeff 0.172 0.84
 Thermo ID A010
 Nozzle ID/Diams. 250 1.250
 Avg. Nozzle Diam. 250 in.

Ambient Temp. 85 °F
 Baro. Pressure* 24.45 in. Hg
 Static Pressure - .66 in. H₂O
 Impinger Gain 168.6 mL
 Silica Gel Gain 10.6 g
 Stack Area 78.54 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>.004</u>	<u>.003</u>
Pitot	<u>8</u>	<u>5</u>
	<u>.000</u>	<u>.000</u>

Filter ID NA

Sample ID K412 NCG 1506

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔP (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM IN/LET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1 B	0	14:06	.60	1.3	882.000	420		92	234	245		65	1.5	
2	4		.61	1.3	887.3	420		91	235	246		64	1.5	
3	8		.64	1.3	884.4	417		91	236	244		62	1.5	
4	12		.64	1.3	842.6	417		93	236	243		60	1.5	
B-1 A	16	14:16	.66	1.3	845.2	417		92	237	241		62	1.5	
2	20	14:24	.53	1.3	897.6	416		92	236	242		60	2.0	
3	24		.45	1.3	900.6	418		91	235	244		57	2.0	
4	28		.36	1.3	903.2	417		92	234	245		58	2.0	
D-1 D	32	14:46	.77	1.3	905.8	420		93	233	250		64	2.0	
2	36		.64	1.3	908.4	420		94	236	256		61	2.0	
3	40		.50	1.3	911.0	418		92	237	254		66	2.0	
4	44		.39	1.3	913.7	415		92	236	252		62	2.0	
D-1 L	48	15:02	.80	1.3	916.4	416		93	232	230		65	2.0	
2	52		.75	1.3	919.1	420		94	235	244		65	2.0	
3	56		.74	1.3	921.8	422		94	233	251		66	2.0	
4	60		.57	1.3	924.371	420		94	234	250		66	2.0	
4	64	15:25	.57	1.3	924.371	420		94	234	250		66	2.0	

*Barometric Pressure is at port elevation

Avg ΔP 1.7653
 Avg ΔH 1.3
 Avg ΔV 5.9388
 Total Volume 42.371
 Avg T_g 418.31
 Avg T_{in} 92.5
 Min/Max 232/238
 Min/Max 241/254
 Max Temp 66
 Max Vac 2.0
 V_{m-std} ✓
 Thermocouple Check Q_g dscfm
 Meter Temp., °F % Isokinetic
 Ref. Temp., °F Calculated by
 Result QC by

WESTON SOLUTIONS
 Integrated Air Services

15730.001.008
 Pulp Dryer, No Paper Machine,
 #2-3 SOT Vg & #1-2 CBs
 Commission Report

Isokinetic Field Data

Method: EPA 4, Moisture

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Client New Ind
 Location/Plant Catawba, SC
 Source No. 1 Combination Boiler
 Sample Location stack outlet
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/23/21
 Test Personnel ATL/LF
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y 988
 Console ΔH@ 1.732
 Probe ID/Length P1253 3'
 Liner Material SS
 Pitot ID/Coeff. P172 0.84
 Thermo ID A010
 Nozzle ID/Diams. 1.250 1.250
 Avg. Nozzle Diam. 1.250 in.

Ambient Temp. 96 °F
 Baro. Pressure* 29.45 in. Hg
 Static Pressure -1.65 in. H₂O
 Impinger Gain 1686 mL/40.5
 Silica Gel Gain 10.6 g/AR
 12.5 159.3
 Stack Area 78.54 ft²
 Total Traverse Points 16

K Factor NA


Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	0.05	0.02
Pitot	8	6
	1.000	1.000

Filter ID NA

Sample ID RUN 23 NCG+506

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔP (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1 B	0	15:41			924.700									
2	4		.59	1.3	927.4	416		95	235	237		66	1.5	
3	8		.62	1.3	924.9	416		95	237	254		64	1.5	
4	12		.60	1.3	932.8	415		95	238	253		63	1.5	
B-1 A	16	15:57	.48	1.3	935.3	414		96	239	253		64	1.5	
2	20	16:06	.61	1.3	938.1	412		96	235	255		65	1.5	
3	24		.55	1.3	940.1	414		96	236	256		63	1.5	
4	28		.50	1.3	943.5	414		97	235	255		61	1.5	
D-1 D	32	16:22	.35	1.3	946.8	414		97	237	256		62	1.5	
2	36	16:29	.74	1.3	948.5	417		98	239	252		65	1.5	
3	40		.69	1.3	952.0	416		98	242	257		63	1.5	
4	44		.48	1.3	954.3	416		99	238	254		63	1.5	
D-1 L	48	16:45	.40	1.3	956.6	414		100	237	254		64	1.5	
2	52	16:54	.77	1.3	959.2	417		100	239	258		66	1.5	
3	56		.75	1.3	962.6	417		99	240	255		64	1.5	
4	60		.72	1.3	964.6	419		98	238	253		64	1.5	
4	64	17:10	.60	1.3	967.270	413		98	237	253		63	3.0	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _d		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _m -std, scf
			1.76534	1.3	412.570	415.25	97.51	97.51	235/242	237/258	✓	66	2.0	✓



Integrated Air Services

Comments NA

Flue Gas Composition

O₂/CO₂ by Orsat 15.925 %

Leak Check, Pre-run NA

Post-run NA

Thermocouple Check

Meter Temp., °F 1.146

Ref. Temp., °F NA

Result NA

15730.001.008

Pulp Dryer, # Paper Machine, #2-3 SD TVs & #1-2 CBs

Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 1 Combination Boiler
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/23/21 Recovery Date 6/23/21
Sample ID Run 1 w/ NCG + SO6 Filter ID NA Analyst ATR

	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	776.1	806.4	643.4		945.5	
Initial	641.1	779.8	638.5		929.5	
Gain	124 ✓	26.6 ✓	4.9 ✓	160.5	16	176.5

Impinger Color clear Labeled? ✓ ✓
Silica Gel Condition used Sealed? ✓ ✓

Run No. 2 Sample Date 6/23/21 Recovery Date 6/23/21
Sample ID Run 2 w/ NCG + SO6 Filter ID NA Analyst ATR

	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	914.3	828.2	646.7		933.1	
Initial	770.1	806.4	643.4	169.3	922.5	
Gain	144.2 ✓	21.8 ✓	2.6	168.6	10.6	179.2

Impinger Color clear 3.3 Labeled? ✓ ✓
Silica Gel Condition good Sealed? ✓ ✓

Run No. 3 Sample Date 6/23/21 Recovery Date 6/23/21
Sample ID Run 3 w/ NCG + SO6 Filter ID NA Analyst ATR

	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	874.3	788.9	635.2		801.7	
Initial	763.9	763.8	628.4	✓	789.2	
Gain	115.4 ✓	25.1 ✓	6.3 ✓	146.8	12.5	159.3

Impinger Color clear Labeled? ✓ ✓
Silica Gel Condition used Sealed? ✓ ✓

Check COC for Sample IDs of Media Blanks



Sample and Velocity Traverse Points - Method 1

Client New Indy
Location/Plant Catawba, SC
Operator VD

Source No. 1 Combination Boiler
W.O. Number 15730.001.008
Date 6/23/21

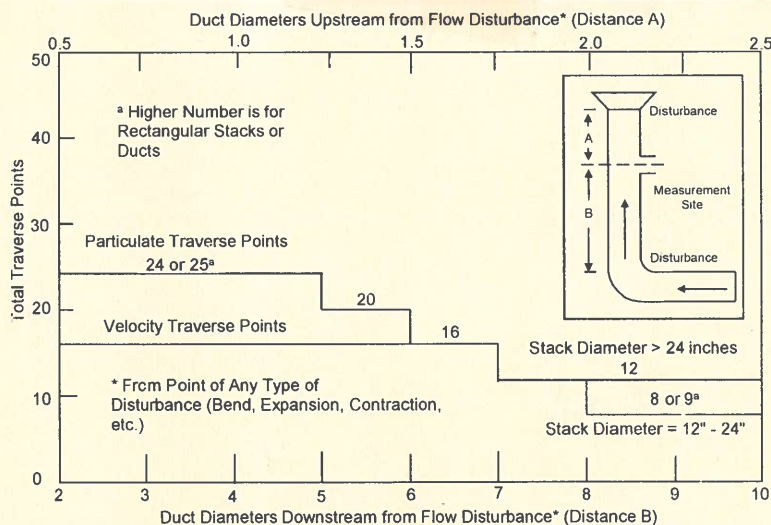
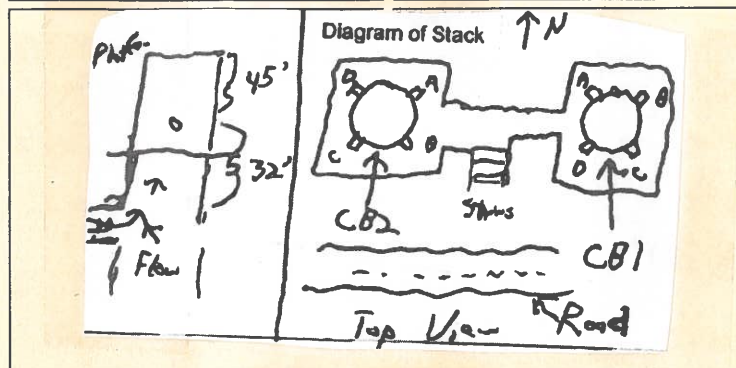
Duct Type	<input checked="" type="checkbox"/> Circular	<input type="checkbox"/> Rectangular
Traverse Type	<input type="checkbox"/> Particulate Traverse	<input checked="" type="checkbox"/> Velocity Traverse <input type="checkbox"/> Stratification Traverse

Depth, far wall to outside of port (in) = C	127.5
Port Depth (in) = D	7.5
Depth of Duct, diameter (in) = C - D	120
Area of Duct (ft ²)	78.54
Number of Ports	4
Traverse Points per Port	4
Total Traverse Points	16

Rectangular Ducts Only	
Width of Duct (in)	
Equivalent Diameter (in)	

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	3.9	11.4
2	10.5	12.6	20.1
3	19.4	23.3	30.8
4	32.3	38.8	46.3

Flow Disturbances	
Upstream - A (ft)	45
Downstream - B (ft)	32
Upstream - A (duct diameters)	4.5
Downstream - B (duct diameters)	3.2



Traverse Point Location % of Stack - Circular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7	4.4			3.2		2.6		2.1
2		85.4		25.0	14.6			10.5		8.2		6.7
3				75.0	29.6			19.4		14.6		11.8
4				93.3	70.4			32.3		22.6		17.7
5					85.4			67.7		34.2		25.0
6					95.8			80.6		65.8		35.8
7								89.5		77.4		64.4
8								96.8		85.4		75.0
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Traverse Point Location % of Stack - Rectangular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular Stack Points & Matrix	
9	3 x 3
12	4 x 3
16	4 x 4
20	5 x 4
25	5 x 5
30	6 x 5
36	6 x 6
42	7 x 6
49	7 x 7

Tape measure ID _____

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 11:58 End Time 12:58

Average Measured TRS Conc.

~~0.80~~ 0.94
0.67 ppm

Recovery No. 2

86.2 %

TRS Corrected for Recovery

0.78 ppm

~~0.93~~

1.09

AB
9130 ✓

AB
9115 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 14:00 End Time 15:00

Average Measured TRS Conc.

Recovery No. 2

TRS Corrected for Recovery

~~0.76~~ 0.92
0.61 ppm

86.2 %

~~0.71~~ ppm

~~0.88~~

1.07

AB
9/29 ✓

AB
9/15 ✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 15:41 End Time 16:41

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.75~~ 0.89
~~0.60~~ ppm
86.2 %
~~0.70~~ ppm

~~0.87~~
1.03

AB
9130 ✓

AB
9115 ✓

RUN DATA

Number 1

Client: New Indy
 Location: Catawba, NC
 Source: #1 Combination Boiler

Project Number: 15730.001.008
 Operator: VD
 Date: 23 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS		
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<
11:58	4	0.09		0	0.54		<2		0	<2		0.071	0.94		1.33038
12:01	3	0.08		35	0.53		<2		0	<2		0.071	0.91		
12:04	3	0.08		35	0.53		<2		0	<2		0.071	0.92		
12:07	3	0.07		36	0.54		<2		0	<2		0.071	0.91		
12:10	3	0.09		37	0.54		<2		0	<2		0.071	0.93		
12:13	3	0.07		37	0.54		<2		0	2	0.08		0.93		
12:16	3	0.08		37	0.55		<2		0	<2		0.071	0.93		
12:19	3	0.08		38	0.55		<2		0	<2		0.071	0.94		
12:22	3	0.08		37	0.55		<2		0	<2		0.071	0.94		
12:25	2	0.07		38	0.55		2	0.17		<2		0.071	0.93		
12:28	3	0.08		39	0.56		<2		0	<2		0.071	0.94		
12:31	2	0.07		40	0.57		<2		0	<2		0.071	0.94		
12:34	2	0.07		41	0.58		<2		0	<2		0.071	0.95		
12:37	3	0.07		39	0.56		<2		0	<2		0.071	0.93		
12:40	4	0.09		39	0.56		2	0.17		<2		0.071	0.96		
12:43	3	0.08		40	0.57		2	0.17		<2		0.071	0.96		
12:46	3	0.08		39	0.56		<2		0	<2		0.071	0.94		
12:49	2	0.07		41	0.57		<2		0	2	0.07		0.95		
12:52	2	0.07		41	0.57		<2		0	<2		0.071	0.95		
12:55	2	0.07		38	0.55		<2		0	<2		0.071	0.92		
Averages															0.94

RUN DATA

Number 2

Client: New Indy
Location: Catawba, NC
Source: #1 Combination Boiler
Project Number: 15730.001.008
Operator: VD
Date: 23 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
14:00	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
14:03	3	0.08		35	0.53		<2		0.16	<2		0.071	0.92
14:06	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
14:09	3	0.08		36	0.54		<2		0.16	<2		0.071	0.92
14:12	4	0.09		36	0.54		<2		0.16	5	0.12		1.03
14:15	2	0.07		37	0.55		<2		0.16	<2		0.071	0.92
14:18	4	0.09		37	0.55		<2		0.16	<2		0.071	0.94
14:21	3	0.09		35	0.53		<2		0.16	<2		0.071	0.91
14:24	2	0.07		35	0.53		3	0.20		<2		0.071	0.94
14:27	<2		0.064	35	0.53		<2		0.16	3	0.09		0.95
14:30	<2		0.064	36	0.54		<2		0.16	<2		0.071	0.90
14:33	<2		0.064	35	0.53		<2		0.16	<2		0.071	0.90
14:36	3	0.08		37	0.55		<2		0.16	<2		0.071	0.92
14:39	<2		0.064	35	0.53		<2		0.16	<2		0.071	0.90
14:42	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.88
14:45	<2		0.064	36	0.54		<2		0.16	<2		0.071	0.90
14:48	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
14:51	2	0.07		34	0.52		<2		0.16	<2		0.071	0.89
14:54	3	0.08		37	0.55		<2		0.16	<2		0.071	0.93
14:57	<2		0.064	34	0.52		<2		0.16	3	0.08		0.92
Averages													0.92

RUN DATA

Number 3

Client: New Indy
Location: Catawba, NC
Source: #1 Combination Boiler
Project Number: 15730.001.008
Operator: VD
Date: 23 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
15:41	3	0.08		32	0.51		<2		0.16	<2		0.071	0.89
15:44	<2		0.064	29	0.48		<2		0.16	<2		0.071	0.84
15:47	4	0.09		28	0.47		<2		0.16	<2		0.071	0.87
15:50	<2		0.064	29	0.48		<2		0.16	<2		0.071	0.85
15:53	<2		0.064	31	0.50		3	0.19		<2		0.071	0.90
15:56	5	0.11		29	0.48		<2		0.16	<2		0.071	0.89
15:59	10	0.15		29	0.48		<2		0.16	<2		0.071	0.94
16:02	15	0.19		30	0.49		<2		0.16	<2		0.071	0.98
16:05	9	0.15		30	0.49		<2		0.16	3	0.09		0.97
16:08	5	0.11		28	0.47		<2		0.16	<2		0.071	0.89
16:11	7	0.13		30	0.49		<2		0.16	<2		0.071	0.91
16:14	8	0.14		29	0.48		<2		0.16	<2		0.071	0.93
16:17	11	0.17		29	0.48		<2		0.16	3	0.08		0.98
16:20	3	0.08		30	0.49		<2		0.16	<2		0.071	0.88
16:23	<2		0.064	30	0.49		<2		0.16	3	0.08		0.88
16:26	3	0.08		30	0.49		<2		0.16	<2		0.071	0.86
16:29	<2		0.064	30	0.49		<2		0.16	<2		0.071	0.85
16:32	3	0.08		29	0.48		<2		0.16	<2		0.071	0.86
16:35	<2		0.064	30	0.49		<2		0.16	<2		0.071	0.85
16:38	3	0.08		29	0.48		<2		0.16	<2		0.071	0.86
Averages													0.89

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
11:58	4	0.09	37	0.54	<2	<0.16	<2	<0.071	0.64
12:01	3	0.08	35	0.53	<2	<0.16	<2	<0.071	0.61
12:04	3	0.08	35	0.53	<2	<0.16	<2	<0.071	0.62
12:07	3	0.07	36	0.54	<2	<0.16	<2	<0.071	0.61
12:10	3	0.09	37	0.54	<2	<0.16	<2	<0.071	0.63
12:13	3	0.07	37	0.54	<2	<0.16	2	0.08	0.77
12:16	3	0.08	37	0.55	<2	<0.16	<2	<0.071	0.63
12:19	3	0.08	38	0.55	<2	<0.16	<2	<0.071	0.64
12:22	3	0.08	37	0.55	<2	<0.16	<2	<0.071	0.63
12:25	2	0.07	38	0.55	2	0.17	<2	<0.071	0.79
12:28	3	0.08	39	0.56	<2	<0.16	<2	<0.071	0.64
12:31	2	0.07	40	0.57	<2	<0.16	<2	<0.071	0.63
12:34	2	0.07	41	0.58	<2	<0.16	<2	<0.071	0.65
12:37	3	0.07	39	0.56	<2	<0.16	<2	<0.071	0.63
12:40	4	0.09	39	0.56	2	0.17	<2	<0.071	0.82
12:43	3	0.08	40	0.57	2	0.17	<2	<0.071	0.82
12:46	3	0.08	39	0.56	<2	<0.16	<2	<0.071	0.64
12:49	2	0.07	41	0.57	<2	<0.16	2	0.07	0.79
12:52	2	0.07	41	0.57	<2	<0.16	<2	<0.071	0.64
12:55	2	0.07	38	0.55	<2	<0.16	<2	<0.071	0.62
Average		0.08		0.55		<0.16		<0.071	0.67 ✓

✓

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
14:00	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
14:03	3	0.08	35	0.53	<2	<0.16	<2	<0.071	0.61
14:06	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
14:09	3	0.08	36	0.54	<2	<0.16	<2	<0.071	0.62
14:12	4	0.09	36	0.54	<2	<0.16	5	0.12	0.87
14:15	2	0.07	37	0.55	<2	<0.16	<2	<0.071	0.61
14:18	4	0.09	37	0.55	<2	<0.16	<2	<0.071	0.64
14:21	3	0.09	35	0.53	<2	<0.16	<2	<0.071	0.61
14:24	2	0.07	35	0.53	3	0.20	<2	<0.071	0.80
14:27	<2	<0.064	35	0.53	<2	<0.16	3	0.09	0.72
14:30	<2	<0.064	36	0.54	<2	<0.16	<2	<0.071	0.54
14:33	<2	<0.064	35	0.53	<2	<0.16	<2	<0.071	0.53
14:36	3	0.08	37	0.55	<2	<0.16	<2	<0.071	0.62
14:39	<2	<0.064	35	0.53	<2	<0.16	<2	<0.071	0.53
14:42	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
14:45	<2	<0.064	36	0.54	<2	<0.16	<2	<0.071	0.54
14:48	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
14:51	2	0.07	34	0.52	<2	<0.16	<2	<0.071	0.59
14:54	3	0.08	37	0.55	<2	<0.16	<2	<0.071	0.62
14:57	<2	<0.064	34	0.52	<2	<0.16	3	0.08	0.69
Average		<0.064		0.53		<0.16		<0.071	0.61 ✓

✓

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
15:41	3	0.08	32	0.51	<2	<0.16	<2	<0.071	0.58
15:44	<2	<0.064	29	0.48	<2	<0.16	<2	<0.071	0.48
15:47	4	0.09	28	0.47	<2	<0.16	<2	<0.071	0.57
15:50	<2	<0.064	29	0.48	<2	<0.16	<2	<0.071	0.48
15:53	<2	<0.064	31	0.50	3	0.19	<2	<0.071	0.69
15:56	5	0.11	29	0.48	<2	<0.16	<2	<0.071	0.59
15:59	10	0.15	29	0.48	<2	<0.16	<2	<0.071	0.64
16:02	15	0.19	30	0.49	<2	<0.16	<2	<0.071	0.68
16:05	9	0.15	30	0.49	<2	<0.16	3	0.09	0.81
16:08	5	0.11	28	0.47	<2	<0.16	<2	<0.071	0.58
16:11	7	0.13	30	0.49	<2	<0.16	<2	<0.071	0.61
16:14	8	0.14	29	0.48	<2	<0.16	<2	<0.071	0.62
16:17	11	0.17	29	0.48	<2	<0.16	3	0.08	0.82
16:20	3	0.08	30	0.49	<2	<0.16	<2	<0.071	0.58
16:23	<2	<0.064	30	0.49	<2	<0.16	3	0.08	0.65
16:26	3	0.08	30	0.49	<2	<0.16	<2	<0.071	0.56
16:29	<2	<0.064	30	0.49	<2	<0.16	<2	<0.071	0.49
16:32	3	0.08	29	0.48	<2	<0.16	<2	<0.071	0.56
16:35	<2	<0.064	30	0.49	<2	<0.16	<2	<0.071	0.49
16:38	3	0.08	29	0.48	<2	<0.16	<2	<0.071	0.56
Average		0.08		0.49		<0.16		<0.071	0.60 ✓

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RUN DATA

Number 7

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **2**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			CC416806 7.257 ppm ✓						
12:28	14344	7.79	<2	<0.12	<2	<0.077	<2	<0.036	7.79
12:31	14847	7.94	<2	<0.12	<2	<0.077	<2	<0.036	7.94
12:34	15003	7.98	<2	<0.12	2	0.09	<2	<0.036	8.07
Average		7.90	✓	<0.12	✓	<0.077	✓	<0.036	✓ 7.93

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Before Run 1

Start Time 08:30 End Time 08:43

Recovery Gas to Probe, Time 08:30

Peak Areas, mv-sec			Average	ppm
11433	11272	11506	11403 ✓	7.65

Recovery Gas to GC, Time 08:40

Peak Areas, mv-sec			Average	ppm
13047	13101	13148	13098 ✓	8.26

Recovery 92.6% ✓

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

After Run 3 Before Run 4
Start Time 16:45 End Time 17:12

Recovery Gas to Probe, Time 16:45

Peak Areas, mv-sec			Average	ppm
10559	10796	10726	10694 ✓	7.38

Recovery Gas to GC, Time 17:07

Peak Areas, mv-sec			Average	ppm
14018	13986	14003	14002 ✓	8.57

Recovery 86.2% /

RECOVERY DATA

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

After Run 6 Before Run 7
Start Time 23:08 End Time 23:33

Recovery Gas to Probe, Time 23:08

Peak Areas, mv-sec			Average	ppm
12008	11871	12366	12082 ✓	7.90

Recovery Gas to GC, Time 23:30

Peak Areas, mv-sec			Average	ppm
14235	14081	14105	14141 ✓	8.62

Recovery 91.7% ✓

✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.25 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0
<hr/>				
1 Flow = 27.4 mL/Min	12.8 ppm	13.5 ppm	17.4 ppm	8.81 ppm
Time: 06:00	Peak Areas, mv-sec			
	28200	16074	not	not
	27714	15989	used	used
	27544	15970		
Average Area	27819 ✓	16011 ✓		
2 Flow = 59.5 mL/Min	5.90 ppm	6.20 ppm	8.02 ppm	4.06 ppm
Time: 06:49	Peak Areas, mv-sec			
	7504	3841	12348	15296
	7611	3774	12960	15012
	7641	3823	12909	15325
Average Area	7585 ✓	3813 ✓	12739 ✓	15211 ✓
3 Flow = 131 mL/Min	2.68 ppm	2.82 ppm	3.64 ppm	1.84 ppm
Time: 07:28	Peak Areas, mv-sec			
	1734	856	2868	3422
	1702	845	2771	3379
	1690	846	2788	3411
Average Area	1709 ✓	849 ✓	2809 ✓	3404 ✓
4 Flow = 271 mL/Min	1.30 ppm	1.36 ppm	1.76 ppm	0.89 ppm
Time: 07:53	Peak Areas, mv-sec			
	440	204	681	847
	433	209	682	842
	472	206	671	834
Average Area	448 ✓	206 ✓	678 ✓	841 ✓

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

H₂S	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	12.8	5.90	2.68	1.30		
Area, mv-sec	27819	7585	1709	448		
Calc. Conc., ppm	12.5	6.11	2.68	1.28		
% Error	-2.3	3.5	0.0	-1.2		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8102	2.4572	0.9997	2	0.064	
MeSH	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	13.5	6.20	2.82	1.36		
Area, mv-sec	16011	3813	849	206		
Calc. Conc., ppm	13.3	6.26	2.84	1.35		
% Error	-0.9	1.0	0.9	-0.9		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8989	2.0680	0.9999	2	0.12	
DMS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	8.02	3.64	1.76			
Area, mv-sec	12739	2809	678			
Calc. Conc., ppm	17.6	7.86	3.68			
% Error	119.4	115.7	109.0			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8747	1.7700	0.9997	2	0.16	
DMDS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	4.06	1.84	0.89			
Area, mv-sec	15211	3404	841			
Calc. Conc., ppm	8.91	3.97	1.86			
% Error	119.6	115.3	109.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8501	2.4250	0.9997	2	0.071	

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.25 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 37.6 mL/Min	9.34 ppm	9.81 ppm	12.7 ppm	6.42 ppm
Time: 07:00	Peak Areas, mv-sec			
	19790	9921	31382	38948
	20319	10076	31742	38693
	19852	9986	30214	37936
Average Area	19987 ✓	9995 ✓	31113 ✓	38526 ✓

2 Flow = 82.8 mL/Min	4.24 ppm	4.46 ppm	5.77 ppm	2.92 ppm
Time: 11:03	Peak Areas, mv-sec			
	4788	2266	7435	8918
	4588	2209	7188	8687
	4419	2218	7198	8791
Average Area	4598 ✓	2231 ✓	7274 ✓	8798 ✓

3 Flow = 180 mL/Min	1.95 ppm	2.05 ppm	2.66 ppm	1.34 ppm
Time: 11:47	Peak Areas, mv-sec			
	998	492	1607	1968
	985	496	1607	1963
	982	497	1614	1971
Average Area	988 ✓	495 ✓	1609 ✓	1967 ✓

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

H₂S	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.34 ✓	4.24 ✓	1.95 ✓		
Area, mv-sec	19987 ✓	4598 ✓	988 ✓		
Calc. Conc., ppm	9.26	4.31	1.94		
% Error	-0.8	1.6	-0.8		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9212	2.4433	0.9998	2	0.077
MeSH	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.81 ✓	4.46 ✓	2.05 ✓		
Area, mv-sec	9995 ✓	2231 ✓	495 ✓		
Calc. Conc., ppm	9.79	4.48	2.05		
% Error	-0.3	0.5	-0.3		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9203	2.0975	>0.9999	2	0.12
DMS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	12.7 ✓	5.77 ✓	2.66 ✓		
Area, mv-sec	31113 ✓	7274 ✓	1609 ✓		
Calc. Conc., ppm	12.6	5.85	2.64		
% Error	-0.7	1.4	-0.7		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8927	2.4098	0.9999	2	0.077
DMDS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	6.42 ✓	2.92 ✓	1.34 ✓		
Area, mv-sec	38526 ✓	8798 ✓	1967 ✓		
Calc. Conc., ppm	6.39	2.94	1.34		
% Error	-0.4	0.8	-0.4		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9009	3.0543	>0.9999	2	0.036

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ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483	716	1197	918
Permeation Rate, nL/min*	351	369	477	241

Barometric Pressure: 29.25 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.25) \\ = 351 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

File: C:\Data\210623 New Indy Catawba No. 1 CB.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press.	Flow		
	psi	mL/min		
H ₂	30	50	Column: 140	Primary: Carbopack
Air	30	60	Detector: 140	Secondary: N/A
Carrier	50	30		Sample Loop: 4"

Injection Cycle

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.25 in. Hg

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 11:58 to 12:58

Run Averages

11.9	7.8	190
------	-----	-----

Pre-run Bias at 10:56

Zero Bias	0.0	0.0	6
Span Bias	10.0	10.1	234
Span Gas	10.1	10.2	242

Post-run Bias at 13:01

Zero Bias	0.0	0.0	3
Span Bias	10.0	10.2	235
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.1 ✓	7.8 ✓	195 ✓
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RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 14:00 to 15:00

Run Averages

11.3	8.4	267
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Pre-run Bias at 13:01

Zero Bias	0.0	0.0	3
Span Bias	10.0	10.2	235
Span Gas	10.1	10.2	242

Post-run Bias at 15:04

Zero Bias	0.0	0.0	5
Span Bias	10.0	10.2	232
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.4 ✓	8.4 ✓	278 ✓
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RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
-----------------------	-------------------------------	--------------------------------	----------------------------------

Time: 15:41 to 16:41

Run Averages

11.9	7.7	328
------	-----	-----

Pre-run Bias at 15:04

Zero Bias	0.0	0.0	5
Span Bias	10.0	10.2	232
Span Gas	10.1	10.2	242

Post-run Bias at 16:43

Zero Bias	0.0	0.0	8
Span Bias	10.0	10.1	234
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.0 ✓	7.7 ✓	344 ✓
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RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs & SOGs						
11:59	3900	11.7	3282	8.1	1867	187
12:00	3863	11.6	3222	8.0	1924	193
12:01	3790	11.4	3276	8.1	1958	196
12:02	3761	11.3	3348	8.3	1906	191
12:03	3751	11.3	3375	8.4	2086	209
12:04	3680	11.1	3408	8.4	2212	221
12:05	3691	11.1	3474	8.6	2000	200
12:06	3760	11.3	3448	8.5	1798	180
12:07	3833	11.5	3382	8.4	1847	185
12:08	3834	11.5	3295	8.2	2034	204
12:09	3821	11.5	3293	8.2	1797	180
12:10	3851	11.6	3318	8.2	1571	157
12:11	3980	12.0	3262	8.1	1774	178
12:12	3983	12.0	3137	7.8	2126	213
12:13	3919	11.8	3133	7.8	1792	179
12:14	3885	11.7	3214	8.0	1646	165
12:15	3860	11.6	3254	8.1	1719	172
12:16	3866	11.6	3283	8.1	2175	218
12:17	3926	11.8	3265	8.1	1905	191
12:18	3922	11.8	3213	8.0	1762	176
12:19	3964	11.9	3196	7.9	1725	173
12:20	3881	11.7	3159	7.8	2045	205
12:21	3855	11.6	3258	8.1	1724	173
12:22	3833	11.5	3284	8.1	1640	164
12:23	3786	11.4	3320	8.2	1587	159
12:24	3736	11.2	3393	8.4	1703	171
12:25	3781	11.4	3417	8.5	1742	174
12:26	3832	11.5	3385	8.4	2014	202
12:27	3915	11.8	3304	8.2	2371	237
12:28	3987	12.0	3201	7.9	2116	212
12:29	4032	12.1	3129	7.7	1853	186
12:30	4020	12.1	3071	7.6	1840	184
12:31	4069	12.2	3094	7.7	1730	173
12:32	4170	12.5	3022	7.5	1955	196
12:33	4165	12.5	2923	7.2	2007	201
12:34	4124	12.4	2922	7.2	2005	201
12:35	4074	12.2	2964	7.3	1810	181
12:36	3934	11.8	3074	7.6	1686	169
12:37	4072	12.2	3177	7.9	1563	157
12:38	4120	12.4	3031	7.5	1849	185

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
12:39	4123	12.4	2977	7.4	1979	198
12:40	4133	12.4	2988	7.4	2012	201
12:41	4185	12.6	2968	7.3	2015	202
12:42	4155	12.5	2913	7.2	2126	213
12:43	4172	12.5	2937	7.3	1950	195
12:44	4138	12.4	2910	7.2	1824	183
12:45	4104	12.3	2957	7.3	1653	166
12:46	4044	12.2	3000	7.4	1704	171
12:47	4064	12.2	3066	7.6	1845	185
12:48	4058	12.2	3025	7.5	2033	204
12:49	4059	12.2	3032	7.5	2065	207
12:50	3992	12.0	3048	7.5	2185	219
12:51	3995	12.0	3098	7.7	1898	190
12:52	3948	11.9	3120	7.7	1851	185
12:53	3920	11.8	3168	7.8	1716	172
12:54	4018	12.1	3188	7.9	1784	179
12:55	4016	12.1	3083	7.6	1767	177
12:56	4035	12.1	3093	7.7	2146	215
12:57	4119	12.4	3045	7.5	2036	204
12:58	3998	12.0	2974	7.4	2112	211
Avg	3958	11.9	3163	7.8	1893	190

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs & SOGs						
14:01	3839	11.5	3272	8.1	2531	253
14:02	3807	11.4	3265	8.1	2546	255
14:03	3771	11.3	3316	8.2	2586	259
14:04	3824	11.5	3336	8.3	2244	225
14:05	3869	11.6	3286	8.1	2280	228
14:06	3857	11.6	3237	8.0	2369	237
14:07	3877	11.7	3252	8.1	2484	249
14:08	3817	11.5	3243	8.0	2715	272
14:09	3876	11.6	3274	8.1	2888	289
14:10	3924	11.8	3230	8.0	2684	269
14:11	3921	11.8	3177	7.9	2684	269
14:12	3909	11.7	3190	7.9	2553	255
14:13	3937	11.8	3191	7.9	2517	252
14:14	3899	11.7	3186	7.9	2571	257
14:15	3890	11.7	3216	8.0	2628	263
14:16	3916	11.8	3216	8.0	2624	263
14:17	3953	11.9	3184	7.9	2827	283
14:18	3882	11.7	3161	7.8	2785	279
14:19	3926	11.8	3241	8.0	2595	260
14:20	3954	11.9	3188	7.9	2549	255
14:21	3913	11.8	3179	7.9	2660	266
14:22	3826	11.5	3223	8.0	2581	258
14:23	3841	11.5	3305	8.2	2659	266
14:24	3790	11.4	3301	8.2	2699	270
14:25	3718	11.2	3369	8.3	2726	273
14:26	3711	11.2	3451	8.5	2690	269
14:27	3692	11.1	3459	8.6	2695	270
14:28	3734	11.2	3475	8.6	2680	268
14:29	3804	11.4	3419	8.5	2589	259
14:30	3777	11.4	3364	8.3	2496	250
14:31	3773	11.3	3404	8.4	2606	261
14:32	3757	11.3	3415	8.5	2632	263
14:33	3727	11.2	3442	8.5	2919	292
14:34	3736	11.2	3444	8.5	2571	257
14:35	3781	11.4	3449	8.5	2658	266
14:36	3750	11.3	3409	8.4	2695	270
14:37	3754	11.3	3435	8.5	2600	260
14:38	3764	11.3	3425	8.5	2717	272
14:39	3729	11.2	3411	8.4	2657	266
14:40	3712	11.2	3456	8.6	2841	284

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
14:41	3705	11.1	3477	8.6	2668	267
14:42	3704	11.1	3502	8.7	2632	263
14:43	3614	10.9	3515	8.7	2647	265
14:44	3571	10.7	3595	8.9	2726	273
14:45	3562	10.7	3663	9.1	2741	274
14:46	3616	10.9	3663	9.1	2750	275
14:47	3573	10.7	3607	8.9	2798	280
14:48	3562	10.7	3656	9.1	2813	281
14:49	3547	10.7	3674	9.1	2724	273
14:50	3566	10.7	3677	9.1	2747	275
14:51	3524	10.6	3670	9.1	2747	275
14:52	3546	10.7	3692	9.1	2775	278
14:53	3562	10.7	3665	9.1	2816	282
14:54	3647	11.0	3638	9.0	2834	283
14:55	3675	11.0	3551	8.8	2831	283
14:56	3719	11.2	3517	8.7	2870	287
14:57	3702	11.1	3465	8.6	2874	287
14:58	3633	10.9	3502	8.7	2843	284
14:59	3574	10.7	3585	8.9	2752	275
15:00	3555	10.7	3653	9.0	2685	269
Avg	3752	11.3	3408	8.4	2672	267

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs & SOGs						
15:42	4136	12.4	2870	7.1	3026	303
15:43	4071	12.2	2928	7.2	3074	307
15:44	4049	12.2	3004	7.4	3120	312
15:45	4035	12.1	3027	7.5	3280	328
15:46	4047	12.2	3040	7.5	3270	327
15:47	4051	12.2	3019	7.5	3290	329
15:48	4015	12.1	3040	7.5	3264	326
15:49	4082	12.3	3054	7.6	3137	314
15:50	4117	12.4	2977	7.4	3095	310
15:51	4104	12.3	2957	7.3	3214	321
15:52	4135	12.4	2964	7.3	3224	322
15:53	4140	12.4	2932	7.3	3344	334
15:54	4138	12.4	2915	7.2	3399	340
15:55	4106	12.3	2932	7.3	3363	336
15:56	4063	12.2	2994	7.4	3173	317
15:57	4114	12.4	3005	7.4	3187	319
15:58	4132	12.4	2957	7.3	3179	318
15:59	4110	12.3	2944	7.3	3291	329
16:00	4076	12.2	2962	7.3	3350	335
16:01	4024	12.1	2991	7.4	3535	354
16:02	3989	12.0	3045	7.5	3492	349
16:03	3964	11.9	3078	7.6	3329	333
16:04	3894	11.7	3119	7.7	3219	322
16:05	3891	11.7	3203	7.9	3140	314
16:06	3890	11.7	3201	7.9	3140	314
16:07	3924	11.8	3199	7.9	3199	320
16:08	3909	11.7	3164	7.8	3403	340
16:09	3980	12.0	3167	7.8	3447	345
16:10	4005	12.0	3080	7.6	3467	347
16:11	3861	11.6	3083	7.6	3388	339
16:12	3879	11.7	3229	8.0	3208	321
16:13	3969	11.9	3183	7.9	3121	312
16:14	3971	11.9	3125	7.7	3072	307
16:15	3936	11.8	3132	7.8	3222	322
16:16	3807	11.4	3166	7.8	3439	344
16:17	3780	11.4	3260	8.1	3402	340
16:18	3834	11.5	3267	8.1	3296	330
16:19	3881	11.7	3195	7.9	3290	329
16:20	3837	11.5	3164	7.8	3238	324
16:21	3863	11.6	3204	7.9	3166	317

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
16:22	3910	11.7	3171	7.8	3172	317
16:23	3944	11.9	3114	7.7	3336	334
16:24	3939	11.8	3081	7.6	3447	345
16:25	3907	11.7	3099	7.7	3383	338
16:26	3911	11.8	3120	7.7	3174	317
16:27	3901	11.7	3127	7.7	3171	317
16:28	3942	11.8	3118	7.7	3189	319
16:29	3912	11.8	3090	7.6	3130	313
16:30	3878	11.7	3125	7.7	3413	341
16:31	3870	11.6	3148	7.8	3486	349
16:32	3793	11.4	3185	7.9	3451	345
16:33	3776	11.3	3259	8.1	3293	329
16:34	3811	11.5	3273	8.1	3258	326
16:35	3879	11.7	3232	8.0	3214	321
16:36	3893	11.7	3160	7.8	3237	324
16:37	3862	11.6	3146	7.8	3276	328
16:38	3858	11.6	3180	7.9	3413	341
16:39	3853	11.6	3181	7.9	3370	337
16:40	3856	11.6	3182	7.9	3339	334
16:41	3808	11.4	3190	7.9	3338	334
Avg	3955	11.9	3099	7.7	3276	328

BIAS

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **23 Jun 2021**

Start Time: 08:43

O₂

Method: EPA 3A

Span Conc. 20.2 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	4	0.0	0.0	0.0	Pass
Span	10.1	3346	10.1	0.0	0.0	Pass

CO₂

Method: EPA 3A

Span Conc. 20.3 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	24	0.0	0.0	0.0	Pass
Span	10.2	4072	10.1	-0.1	-0.5	Pass

SO₂

Method: EPA 6C

Span Conc. 458 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	80	8	7	1.5	Pass
Span	239	2334	234	-5	-1.1	Pass

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 10:56

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	9	0.0	0.0	0.0 ✓	Pass
Span	10.1	3325	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	9	0.0	0.0	0.0 ✓	Pass
Span	10.1	3325	10.0	-0.1	-0.5 ✓	Pass

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	7	0.0	0.0	0.0 ✓	Pass
Span	10.2	4076	10.1	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	7	0.0	0.0	0.0 ✓	Pass
Span	10.1	4076	10.1	0.0	0.0 ✓	Pass

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**



Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 10:56

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	52	6	5	1.1	Pass
Span	239	2334	234	-5	-1.1	Pass

Calibration Drift						
Standard	Initial*	Final		Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	8	52	6	-2	-0.4	 Pass
Span	234	2334	234	0	0.0	 Pass
*Bias No. 1						

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 13:01

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	9	0.0	0.0	0.0 ✓	Pass
Span	10.1	3337	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	9	0.0	0.0	0.0 ✓	Pass
Span	10.0	3337	10.0	0.0	0.0 ✓	Pass

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	17	0.0	0.0	0.0 ✓	Pass
Span	10.2	4108	10.2	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	17	0.0	0.0	0.0 ✓	Pass
Span	10.1	4108	10.2	0.1	0.5 ✓	Pass

*Bias No. 2

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 13:01

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	23	3	2	0.4 ✓	Pass
Span	239	2346	235	-4	-0.9 ✓	Pass

Calibration Drift							
Standard	Initial*	Final	Difference	Drift		Status	
Gas	ppm	mv	ppm	ppm	%		
Zero	6	23	3	-3	-0.7	✓	Pass
Span	234	2346	235	1	0.2	✓	Pass
*Bias No. 2							

*Bias No. 2

✓

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 15:04

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	9	0.0	0.0	0.0 ✓	Pass
Span	10.1	3341	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final		Difference	Drift	Status
Gas	%	mv	%	%	%	
Zero	0.0	9	0.0	0.0	0.0	✓ Pass
Span	10.0	3341	10.0	0.0	0.0	✓ Pass

*Bias No. 3

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	8	0.0	0.0	0.0 ✓	Pass
Span	10.2	4109	10.2	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final		Difference	Drift	Status
Gas	%	mv	%	%	%	
Zero	0.0	8	0.0	0.0	0.0 ✓	Pass
Span	10.2	4109	10.2	0.0	0.0 ✓	Pass

*Bias No. 3

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 15:04

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	41	5	4	0.9 ✓	Pass
Span	239	2322	232	-7	-1.5 ✓	Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	3	41	5	2	0.4 ✓	Pass
Span	235	2322	232	-3	-0.7 ✓	Pass

*Bias No. 3

Handwritten signature

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 16:43

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.1	3335	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.0	3335	10.0	0.0	0.0 ✓	Pass

*Bias No. 4

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	12	0.0	0.0	0.0 ✓	Pass
Span	10.2	4067	10.1	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	12	0.0	0.0	0.0 ✓	Pass
Span	10.2	4067	10.1	-0.1	-0.5 ✓	Pass

*Bias No. 4

[Handwritten signature]

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 16:43

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	79	8	7	1.5 ✓	Pass
Span	239	2341	234	-5	-1.1 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	ppm	mv	ppm	ppm	%	
Zero	5	79	8	3	0.7 ✓	Pass
Span	232	2341	234	2	0.4 ✓	Pass

*Bias No. 4

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 08:37

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero ✓	-	3
10.1 ✓	XC013544B	3354
20.2 ✓	CC275468	6750

Curve Coefficients

Slope	Intercept	Corr. Coeff.
333.3	-7 ✓	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero ✓	-	4
10.2 ✓	XC013544B	4128
20.3 ✓	CC275468	8145

Curve Coefficients

Slope	Intercept	Corr. Coeff.
401.6	18 ✓	>0.9999 ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 08:37

SO₂

Method: EPA 6C

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero ✓	-	9
242 ✓	CC234516	2392
458 ✓	EB0108003	4596

Curve Coefficients

Slope	Intercept ✓	Corr. Coeff. ✓
10.01	-5	0.9999



CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 08:37

O₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 333.3 Intercept -6.7

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	3	0.0	0.0	0.0 ✓	Pass
10.1	3354	10.1	0.0	0.0 ✓	Pass
20.2	6750	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Slope 401.6 Intercept 18.5

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	4	0.0	0.0	0.0 /	Pass
10.2	4128	10.2	0.0	0.0 /	Pass
20.3	8145	20.2	-0.1	-0.5 /	Pass

SO₂

Method: EPA 6C
Span Conc. 458 ppm

Slope 10.01 Intercept -5

Standard	Response	Result	Difference	Error	Status
ppm	mv	ppm	ppm	%	
Zero	9	1	1	0.2 ✓	Pass
242	2392	239	-3	-0.7 ✓	Pass
458	4596	459	1	0.2 ✓	Pass

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

File: K:\15730 New Indy\001 Catawba SC\008\Data\210623 New Indy Catawba No. 1 CBb.cem

Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04

Computer: WSAUBCHEMLABGC1 **Trailer:** 281

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.3

Channel 5

Analyte	SO₂
Method	EPA 6C, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T100H SN 374
Full-Scale Output, mv	10000
Analyzer Range, ppm	500
Span Concentration, ppm	458



**NO. 1 COMBINATION BOILER
(CONDITION 2: NCG GASES ONLY)**

New Indy
Catawba, SC

15730.001.008
No. 1 Combination Boiler
Condition 2: NCGs only

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/23/21	6/23/21	6/23/21	---
Time Began	1824 ✓	2019 ✓	2202 ✓	---
Time Ended	1924 ✓	2119 ✓	2302 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	1.30E+05 ✓	1.31E+05 ✓	1.30E+05 ✓	1.30E+05
BWS	0.164 ✓	0.163 ✓	0.171 ✓	0.166
% Oxygen	11.4 ✓	11.9 ✓	11.6 ✓	11.6
Recovery, %	91.7 ✓	91.7 ✓	91.7 ✓	91.7
<hr/>				
Sulfur Dioxide	MW= 64.06			
Concentration, ppm	313.0	348.0	349.0	336.7
Emission Rate, lb/hr	404.4	452.9	450.8	436.1
<hr/>				
Total Reduced Sulfur	(TRS MW)= 34.08			
Concentration, ppm	0.97 ✓	0.98 ✓	0.99 ✓	0.98
Emission Rate, lb/hr	0.67	0.68	0.68	0.68
<hr/>				
H2S	(H2S MW)= 34.08			
Concentration, ppm	0.07 ✓	0.07 ✓	0.07 ✓	0.07
Concentration, ppm (Corrected for Recovery)	0.08	0.08	0.08	0.08
Emission Rate, lb/hr	0.05	0.05	0.05	0.05

New Indy
Catawba, SC

15730.001.008
No. 1 Combination Boiler

Condition 2: NCGs only

ISOKINETIC CALCULATIONS

Run Number		1	2	3	Mean
Date		6/23/21 ✓	6/23/21 ✓	6/23/21 ✓	---
Time Began		1824 ✓	2019 ✓	2202 ✓	---
Time Ended		1951 ✓	2145 ✓	2325 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	64.0 ✓	64 ✓	64 ✓	64
Stack Diameter, in.	(Dia.)	120.00 ✓	120.00 ✓	120.00 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.45 ✓	29.45 ✓	29.45 ✓	29.45
Static Pressure, in. H2O	(Pg)	-0.65 ✓	-0.65 ✓	-0.65 ✓	-0.65
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	0.9880 ✓	0.9880 ✓	0.9880 ✓	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 ✓	1.7320 ✓	1.7320 ✓	1.7320
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	42.643 ✓	42.125 ✓	41.764 ✓	42.177
Meter Temperature, °F	(Tm)	94.1 ✓	85.2 ✓	77.6 ✓	85.6
Meter Temperature, °R	(Tm-R)	554.1	545.2	537.6	545.6
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2})avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	165.5 ✓	165.0 ✓	175.8 ✓	168.8
CO2 Concentration, %	(CO2)	8.3 ✓	7.8 ✓	8.1 ✓	8.1
O2 Concentration, %	(O2)	11.4 ✓	11.9 ✓	11.6 ✓	11.6
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2})avg)	0.748 ✓	0.750 ✓	0.753 ✓	0.750
Stack Temperature, °F	(Ts)	415.7 ✓	411.3 ✓	415.1 ✓	414.0
Stack Temperature, °R	(Ts-R)	875.7	871.3	875.1	874.0
CALCULATED DATA					
Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	78.54 ✓	78.54 ✓	78.54 ✓	78.54
Stack Pressure, in. Hg	(Ps)	29.40	29.40	29.40	29.40
Meter Pressure, in. Hg	(Pm)	29.55	29.55	29.55	29.55
Standard Meter Volume, ft ³	(Vmstd)	39.631	39.788	40.006	39.808
Standard Water Volume, ft ³	(Vwstd)	7.790	7.767	8.275	7.944
Moisture Fraction (Measured)	(BWS)	0.164	0.163	0.171	0.166
Moisture Fraction (lower sat/meas)	(BWS)	0.164	0.163	0.171	0.166
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.78	29.72	29.76	29.76
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.85	27.81	27.74	27.80
Average Stack Gas Velocity, ft/sec	(Vs)	55.53	55.61	55.97	55.70
Stack Gas Flow, actual, ft ³ /min	(Qa)	261702	262033	263755	262497
Stack Gas Flow, Std, ft ³ /min	(Qs)	129539	130503	129526	129856
Calibration check	(Yqa)	0.9922	0.9973	0.9983	0.996
Percent difference from Y					0.80%

am

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Ind
 Location/Plant Catawba, SC
 Source No. 1 Combination Boiler
 Sample Location stack outlet
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/23/21
 Test Personnel ATC/LC
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y .488
 Console ΔH@ 1.732
 Probe ID/Length PR3B 5'
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A010
 Nozzle ID/Diams. .280, .280, .280
 Avg. Nozzle Diam. .280 in.

Ambient Temp. 85 °F
 Baro. Pressure* 29.45 in. Hg
 Static Pressure -65 in. H₂O
 Impinger Gain 156.2 mL
 Silica Gel Gain 9.3 g
 Stack Area 78.54 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>.004</u>	<u>.002</u>
Pitot	<u>.000</u>	<u>.000</u>

Filter ID NA
 Sample ID Ryn1 NCG only

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A1B	0	18:24			967.500									
2	4		.59	1.3	970.1	416		95	237	250		66	2	
3	8		.60	1.3	972.8	416		95	238	252		63	2	
4	12		.61	1.3	975.5	415		95	238	255		63	2	
5	16	18:40	.55	1.3	978.1	415		95	238	254		61	2	
6	20	19:46	.49	1.3	981.0	416		96	237	250		64	2.5	
7	24		.43	1.3	983.4	416		96	238	251		62	2.5	
8	28		.37	1.3	986.1	415		96	239	252		63	2.5	
9	32	19:02	.70	1.3	988.8	415		94	240	251		64	2.5	
10	36	19:08	.69	1.3	991.5	415		94	235	250		66	2.5	
11	40		.48	1.3	994.1	417		94	236	251		65	2.5	
12	44		.40	1.3	997.3	417		94	235	250		66	2.5	
13	48	19:24	.74	1.3	999.5	415		94	236	252		65	2.5	
14	52	19:35	.72	1.3	1002.3	417		92	238	255		64	2.5	
15	56		.70	1.3	1004.7	416		91	239	256		63	2.5	
16	60		.55	1.3	1007.4	416		91	239	257		64	2.5	
17	64	19:51	.56	1.3	1010.1	414		91	240	256		64	2.5	
18					1016.1	413								
19					1022.3	415								
20					1028.5	417								
21					1034.7	416								
22					1040.9	415								
23					1047.1	414								
24					1053.3	413								
25					1059.5	412								
26					1065.7	411								
27					1071.9	410								
28					1078.1	409								
29					1084.3	408								
30					1090.5	407								
31					1096.7	406								
32					1102.9	405								
33					1109.1	404								
34					1115.3	403								
35					1121.5	402								
36					1127.7	401								
37					1133.9	400								
38					1140.1	399								
39					1146.3	398								
40					1152.5	397								
41					1158.7	396								
42					1164.9	395								
43					1171.1	394								
44					1177.3	393								
45					1183.5	392								
46					1189.7	391								
47					1195.9	390								
48					1202.1	389								
49					1208.3	388								
50					1214.5	387								
51					1220.7	386								
52					1226.9	385								
53					1233.1	384								
54					1239.3	383								
55					1245.5	382								
56					1251.7	381								
57					1257.9	380								
58					1264.1	379								
59					1270.3	378								
60					1276.5	377								
61					1282.7	376								
62					1288.9	375								
63					1295.1	374								
64					1301.3	373								

*Barometric Pressure is at port elevation



Integrated Air Services

15730.001.008
 Pulp Dryer, #1 Paper Machine,
 #2-3 SDB's, & #1-2 CBs
 Emission Report

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run _____
 Post-run _____

Flue Gas Composition
 Oxygen, % _____
 Carbon Dioxide, % _____
 Moisture, % _____

Comments NCG only

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 1 Combination Boiler
 Sample Location Stack 16
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/23/21
 Test Personnel ATL/LL
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y 0.88
 Console ΔH@ 1.732
 Probe ID/Length PR53 5'
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A010
 Nozzle ID/Diams. 0.250
 Avg. Nozzle Diam. 0.250 in.

Ambient Temp. 80 °F
 Baro. Pressure* 29.45 in. Hg
 Static Pressure -65 in. H₂O
 Impinger Gain 153 mL
 Silica Gel Gain 12 g

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	8	5
Pitot	600	006

Filter ID NA
 Sample ID Run 2 NCG only

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1 B	4	20:19	.58	1.3	10,466	412		89	236	257		65	2	
2	8		.58	1.3	15.4	411		84	237	257		64	2	
3	12		.60	1.3	18.4	410		88	238	256		61	2	
4	16	20:35	.46	1.3	21.2	410		88	234	255		56	2	
B-1 A	20:41	20:35	.51	1.3	23.2	413		87	238	254		57	2	
2	24		.50	1.3	26.6	413		87	239	255		55	2	
3	28		.45	1.3	28.9	411		86	239	256		56	2	
4	32	20:57	.36	1.3	31.5	410		86	240	255		56	2	
D-1 D	36	21:02	.71	1.3	34.3	412		86	236	256		62	2	
2	40		.69	1.3	36.9	412		86	235	255		59	2	
3	44		.48	1.3	39.5	413		84	236	253		58	2	
4	48	21:18	.39	1.3	42.6	410		83	235	254		59	2	
E-1 C	52	21:29	.75	1.3	45.1	411		81	236	253		59	2	
2	56		.71	1.3	47.5	411		81	235	254		60	2	
3	60	21:45	.71	1.3	49.9	412		81	235	255		66	2	
4	64	21:48	.53	1.3	52.5	416		81	236	256		61	2	
*Barometric Pressure at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _s	Avg T _m			Min/Max	Min/Max	Max Temp	Max Vac	V _{m-sld} scf
			.7501	1.3	42.125	411	85.1			235/240	253/254	65	2	



Integrated Air Services

Flue Gas Composition
 Oxygen, % 11.40
 Carbon Dioxide, % 11.40
 Moisture, % 11.40

Thermocouple Check
 Meter Temp., °F 65
 Ref. Temp., °F 65
 Result Pass

15730.001.008
 Pulp Dryer, #3 Paper Machine,
 #2-3 Stacks, & #1-2 CBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 1 Combination Boiler
 Sample Location STAIRS OUTLET
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/23/21
 Test Personnel ATL / CL
 Sample Time 64 min.

Console ID A010 Ambient Temp. 75 °F
 Meter Corr., Y 988 Baro. Pressure* 29.45 in. Hg
 Console ΔH@ 1.732 Static Pressure -65 in. H₂O
 Probe ID/Length PL3B 5' Impinger Gain 166 mL
 Liner Material SS Silica Gel Gain 9.8 g
 Pitot ID/Coeff. 0.172 0.84
 Thermo ID A010 Stack Area 78.54 ft²
 Nozzle ID/Diams. 250 250 Total Traverse Points 16
 Avg. Nozzle Diam. 250 in.

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>8</u>	<u>.000</u>
Pitot	<u>.000</u>	<u>.000</u>

Filter ID NA
 Sample ID Run 3 NCG only

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A1 B	0	22:02			52.800									
2	4		.60	1.3	55.5	417		78	235	255		62	2	
3	8		.61	1.3	58.1	416		78	234	253		59	2	
4	12		.54	1.3	60.6	415		78	235	253		57	2	
5	16	22:18	.45	1.3	63.3	411		78	235	254		57	2	
6-1 A	20	22:25	.57	1.3	65.8	415		79	236	253		64	2	
2	24		.50	1.3	68.3	415		78	237	252		58	2	
3	28		.43	1.3	71.1	416		78	239	253		58	2	
4	32	22:41	.39	1.3	73.7	412		77	240	253		58	2	
4-1 D	36	22:47	.73	1.3	76.2	417		77	240	256		63	2	
2	40		.70	1.3	79.0	418		78	237	255		54	2	
3	44		.48	1.3	81.6	417		78	238	254		54	2	
4	48	23:03	.42	1.3	84.1	416		78	239	255		55	2	
6-1 C	52	23:09	.73	1.3	86.7	416		77	240	256		60	2	
2	56		.70	1.3	89.3	415		77	242	255		57	2	
3	60		.68	1.3	92.0	414		76	240	256		56	2	
4	64	23:25	.57	1.3	94.564	412		76	239	255		56	2	

*Barometric Pressure is at port elevation



Flue Gas Composition: O₂/CO₂ by Orsat Fyrite M3A
 Oxygen, % 11.76
 Carbon Dioxide, % 1.140
 Moisture, % 1.140
 Comments NCG only
 Thermocouple Check: Meter Temp., °F 64 Max Temp 64 Max Vac 2 m-std, scf 2
 % Isokinetic NA
 Calculated by NA
 QC by NA

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 1 Combination Boiler
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/23/21 Recovery Date 6/23/21
Sample ID Run 21 NCG only Filter ID NA Analyst ATR

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	806.1	745.3	651.3		942.4	
Initial	674.8	725.0	646.7	✓	933.1	
Gain	131.3 ✓	20.3 ✓	4.6 ✓	156.2	9.3	165.5

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Run No. 2 Sample Date 6/23/21 Recovery Date 6/23/21
Sample ID Run 2 NCG only Filter ID NA Analyst ATR

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	898.4	751.2	639.3		897.6	
Initial	770	730.7	635.2	✓	885.6	
Gain	128.4 ✓	20.5 ✓	4.1 ✓	153	12	165

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Run No. 3 Sample Date 6/23/21 Recovery Date 6/23/21
Sample ID Run 3 NCG only Filter ID NA Analyst ATR

Contents	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Final	843.1	761.2	655.2		891.8	
Initial	696.4	745.3	651.3	✓	882.0	
Gain	146.2 ✓	15.9 ✓	3.9 ✓	166	9.8	175.8

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Check COC for Sample IDs of Media Blanks

RUN SUMMARY

Number 4

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 18:24 End Time 19:24

Average Measured TRS Conc.

Recovery No. 3

TRS Corrected for Recovery

~~0.74~~ 0.89

~~0.58~~ ppm

91.7 %

~~0.63~~ ppm

~~0.81~~

0.97

A3 ✓
9/29

A3
9/15

RUN SUMMARY

Number 5

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 20:19 End Time 21:19

Average Measured TRS Conc.

~~0.72~~ 0.90

0.55 ppm

Recovery No. 3

91.7 %

TRS Corrected for Recovery

~~0.80~~ ppm

~~0.79~~
0.98

AB
91.7% ✓

AB
91.5% ✓

RUN SUMMARY

Number 6

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time 22:02 End Time 23:02

Average Measured TRS Conc.

~~0.76~~ 0.91
0.81 ppm

Recovery No. 3

91.7 %

TRS Corrected for Recovery

0.67 ppm

AB
912g ✓

0.89
0.99

AB
9115 ✓

RUN DATA

Number 4

Client: New Indy
 Location: Catawba, NC
 Source: #1 Combination Boiler

Project Number: 15730.001.008
 Operator: VD
 Date: 23 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
18:24	3	0.07		34	0.52		<2		0.16	<2		0.071	0.89
18:27	<2		0.064	32	0.50		<2		0.16	<2		0.071	0.87
18:30	<2		0.064	32	0.51		<2		0.16	<2		0.071	0.88
18:33	<2		0.064	31	0.49		<2		0.16	<2		0.071	0.86
18:36	3	0.07		31	0.50		3	0.21		<2		0.071	0.92
18:39	<2		0.064	32	0.51		<2		0.16	<2		0.071	0.87
18:42	<2		0.064	32	0.51		<2		0.16	<2		0.071	0.87
18:45	<2		0.064	33	0.52		<2		0.16	<2		0.071	0.88
18:48	<2		0.064	32	0.50		<2		0.16	<2		0.071	0.87
18:51	<2		0.064	34	0.52		<2		0.16	4	0.10		0.94
18:54	<2		0.064	33	0.52		<2		0.16	<2		0.071	0.88
18:57	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.88
19:00	2	0.07		36	0.53		<2		0.16	<2		0.071	0.91
19:03	<2		0.064	36	0.54		<2		0.16	<2		0.071	0.90
19:06	2	0.06		34	0.53		2	0.18		<2		0.071	0.91
19:09	3	0.07		35	0.53		<2		0.16	<2		0.071	0.90
19:12	<2		0.064	35	0.53		<2		0.16	<2		0.071	0.90
19:15	<2		0.064	35	0.53		<2		0.16	<2		0.071	0.89
19:18	2	0.07		35	0.53		<2		0.16	2	0.08		0.91
19:21	2	0.07		36	0.54		<2		0.16	<2		0.071	0.91
Averages													0.89

RUN DATA

Number 5

Client: New Indy
 Location: Catawba, NC
 Source: #1 Combination Boiler

Project Number: 15730.001.008
 Operator: VD
 Date: 23 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
20:19	2	0.06		32	0.51		<2		0.16	<2		0.071	0.87
20:22	<2		0.064	29	0.48		<2		0.16	<2		0.071	0.85
20:25	<2		0.064	31	0.50		<2		0.16	<2		0.071	0.86
20:28	<2		0.064	33	0.51		<2		0.16	<2		0.071	0.88
20:31	<2		0.064	33	0.52		<2		0.16	<2		0.071	0.88
20:34	<2		0.064	32	0.51		<2		0.16	<2		0.071	0.87
20:37	<2		0.064	32	0.50		<2		0.16	<2		0.071	0.87
20:40	<2		0.064	33	0.51		<2		0.16	<2		0.071	0.88
20:43	<2		0.064	33	0.52		<2		0.16	<2		0.071	0.88
20:46	<2		0.064	33	0.51		4	0.24		6	0.13		1.08
20:49	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
20:52	<2		0.064	32	0.50		<2		0.16	<2		0.071	0.87
20:55	3	0.08		35	0.53		<2		0.16	<2		0.071	0.91
20:58	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.88
21:01	<2		0.064	35	0.53		<2		0.16	<2		0.071	0.90
21:04	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
21:07	<2		0.064	36	0.54		<2		0.16	<2		0.071	0.90
21:10	<2		0.064	37	0.54		<2		0.16	<2		0.071	0.91
21:13	<2		0.064	39	0.56		<2		0.16	<2		0.071	0.93
21:16	3	0.08		34	0.52		<2		0.16	<2		0.071	0.90
Averages													0.90

RUN DATA

Number 6

Client: New Indy
 Location: Catawba, NC
 Source: #1 Combination Boiler

Project Number: 15730.001.008
 Operator: VD
 Date: 23 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
22:02	<2		0.064	31	0.49		<2		0.16	<2		0.071	0.86
22:05	<2		0.064	33	0.52		<2		0.16	<2		0.071	0.88
22:08	<2		0.064	32	0.51		<2		0.16	<2		0.071	0.87
22:11	<2		0.064	31	0.50		<2		0.16	<2		0.071	0.87
22:14	2	0.07		33	0.51		<2		0.16	<2		0.071	0.88
22:17	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
22:20	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
22:23	<2		0.064	36	0.54		2	0.17		<2		0.071	0.91
22:26	<2		0.064	35	0.53		5	0.28		<2		0.071	1.02
22:29	<2		0.064	33	0.52		<2		0.16	<2		0.071	0.88
22:32	<2		0.064	34	0.52		<2		0.16	<2		0.071	0.89
22:35	<2		0.064	35	0.53		<2		0.16	<2		0.071	0.90
22:38	3	0.07		35	0.53		<2		0.16	<2		0.071	0.90
22:41	2	0.07		35	0.53		<2		0.16	2	0.08		0.92
22:44	2	0.07		36	0.54		3	0.19		<2		0.071	0.94
22:47	<2		0.064	36	0.53		3	0.19		<2		0.071	0.93
22:50	<2		0.064	36	0.54		3	0.20		2	0.07		0.94
22:53	<2		0.064	36	0.54		<2		0.16	3	0.09		0.94
22:56	<2		0.064	37	0.54		<2		0.16	<2		0.071	0.91
22:59	<2		0.064	37	0.55		<2		0.16	<2		0.071	0.91
Averages													0.91

0.07

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
18:24	3	0.07	34	0.52	<2	<0.16	<2	<0.071	0.59
18:27	<2	<0.064	32	0.50	<2	<0.16	<2	<0.071	0.50
18:30	<2	<0.064	32	0.51	<2	<0.16	<2	<0.071	0.51
18:33	<2	<0.064	31	0.49	<2	<0.16	<2	<0.071	0.49
18:36	3	0.07	31	0.50	3	0.21	<2	<0.071	0.78
18:39	<2	<0.064	32	0.51	<2	<0.16	<2	<0.071	0.51
18:42	<2	<0.064	32	0.51	<2	<0.16	<2	<0.071	0.51
18:45	<2	<0.064	33	0.52	<2	<0.16	<2	<0.071	0.52
18:48	<2	<0.064	32	0.50	<2	<0.16	<2	<0.071	0.50
18:51	<2	<0.064	34	0.52	<2	<0.16	4	0.10	0.72
18:54	<2	<0.064	33	0.52	<2	<0.16	<2	<0.071	0.52
18:57	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
19:00	2	0.07	36	0.53	<2	<0.16	<2	<0.071	0.60
19:03	<2	<0.064	36	0.54	<2	<0.16	<2	<0.071	0.54
19:06	2	0.06	34	0.53	2	0.18	<2	<0.071	0.77
19:09	3	0.07	35	0.53	<2	<0.16	<2	<0.071	0.60
19:12	<2	<0.064	35	0.53	<2	<0.16	<2	<0.071	0.53
19:15	<2	<0.064	35	0.53	<2	<0.16	<2	<0.071	0.53
19:18	2	0.07	35	0.53	<2	<0.16	2	0.08	0.75
19:21	2	0.07	36	0.54	<2	<0.16	<2	<0.071	0.61
Average		<0.064		0.52		<0.16		<0.071	0.58 ✓

[Handwritten signature]

RUN DATA

Number 5

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
20:19	2	0.06	32	0.51	<2	<0.16	<2	<0.071	0.57
20:22	<2	<0.064	29	0.48	<2	<0.16	<2	<0.071	0.48
20:25	<2	<0.064	31	0.50	<2	<0.16	<2	<0.071	0.50
20:28	<2	<0.064	33	0.51	<2	<0.16	<2	<0.071	0.51
20:31	<2	<0.064	33	0.52	<2	<0.16	<2	<0.071	0.52
20:34	<2	<0.064	32	0.51	<2	<0.16	<2	<0.071	0.51
20:37	<2	<0.064	32	0.50	<2	<0.16	<2	<0.071	0.50
20:40	<2	<0.064	33	0.51	<2	<0.16	<2	<0.071	0.51
20:43	<2	<0.064	33	0.52	<2	<0.16	<2	<0.071	0.52
20:46	<2	<0.064	33	0.51	4	0.24	6	0.13	1.01
20:49	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
20:52	<2	<0.064	32	0.50	<2	<0.16	<2	<0.071	0.50
20:55	3	0.08	35	0.53	<2	<0.16	<2	<0.071	0.61
20:58	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
21:01	<2	<0.064	35	0.53	<2	<0.16	<2	<0.071	0.53
21:04	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
21:07	<2	<0.064	36	0.54	<2	<0.16	<2	<0.071	0.54
21:10	<2	<0.064	37	0.54	<2	<0.16	<2	<0.071	0.54
21:13	<2	<0.064	39	0.56	<2	<0.16	<2	<0.071	0.56
21:16	3	0.08	34	0.52	<2	<0.16	<2	<0.071	0.60
Average		<0.064		0.52		<0.16		<0.071	0.55 ✓

rw

RUN DATA

Number 6

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
22:02	<2	<0.064	31	0.49	<2	<0.16	<2	<0.071	0.49
22:05	<2	<0.064	33	0.52	<2	<0.16	<2	<0.071	0.52
22:08	<2	<0.064	32	0.51	<2	<0.16	<2	<0.071	0.51
22:11	<2	<0.064	31	0.50	<2	<0.16	<2	<0.071	0.50
22:14	2	0.07	33	0.51	<2	<0.16	<2	<0.071	0.58
22:17	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
22:20	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
22:23	<2	<0.064	36	0.54	2	0.17	<2	<0.071	0.71
22:26	<2	<0.064	35	0.53	5	0.28	<2	<0.071	0.81
22:29	<2	<0.064	33	0.52	<2	<0.16	<2	<0.071	0.52
22:32	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
22:35	<2	<0.064	35	0.53	<2	<0.16	<2	<0.071	0.53
22:38	3	0.07	35	0.53	<2	<0.16	<2	<0.071	0.60
22:41	2	0.07	35	0.53	<2	<0.16	2	0.08	0.76
22:44	2	0.07	36	0.54	3	0.19	<2	<0.071	0.80
22:47	<2	<0.064	36	0.53	3	0.19	<2	<0.071	0.72
22:50	<2	<0.064	36	0.54	3	0.20	2	0.07	0.88
22:53	<2	<0.064	36	0.54	<2	<0.16	3	0.09	0.72
22:56	<2	<0.064	37	0.54	<2	<0.16	<2	<0.071	0.54
22:59	<2	<0.064	37	0.55	<2	<0.16	<2	<0.071	0.55
Average		<0.064		0.53		<0.16		<0.071	0.61 ✓

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RUN DATA

Number 7

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **2**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
CC416806 7.257 ppm									
12:28	14344	7.79	<2	<0.12	<2	<0.077	<2	<0.036	7.79
12:31	14847	7.94	<2	<0.12	<2	<0.077	<2	<0.036	7.94
12:34	15003	7.98	<2	<0.12	2	0.09	<2	<0.036	8.07
Average		7.90		<0.12		<0.077		<0.036	7.93

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Before Run 1

Start Time 08:30 End Time 08:43

Recovery Gas to Probe, Time 08:30

Peak Areas, mv-sec			Average	ppm
11433	11272	11506	11403 ✓	7.65

Recovery Gas to GC, Time 08:40

Peak Areas, mv-sec			Average	ppm
13047	13101	13148	13098 ✓	8.26

Recovery 92.6% ✓

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

After Run 3 Before Run 4
Start Time 16:45 End Time 17:12

Recovery Gas to Probe, Time 16:45

<u>Peak Areas, mv-sec</u>			<u>Average</u>	<u>ppm</u>
10559	10796	10726	10694	✓ 7.38

Recovery Gas to GC, Time 17:07

<u>Peak Areas, mv-sec</u>			<u>Average</u>	<u>ppm</u>
14018	13986	14003	14002	✓ 8.57

Recovery 86.2% ✓

✓

RECOVERY DATA

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

After Run 6 Before Run 7
Start Time 23:08 End Time 23:33

Recovery Gas to Probe, Time 23:08

Peak Areas, mv-sec			Average	ppm
12008	11871	12366	12082 /	7.90

Recovery Gas to GC, Time 23:30

Peak Areas, mv-sec			Average /	ppm
14235	14081	14105	14141	8.62

Recovery 91.7% /

✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

Ambient Temperature: 72°C

Barometric Pressure: 29.25 in. Hg

Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 27.4 mL/Min 12.8 ppm 13.5 ppm 17.4 ppm 8.81 ppm

Time: 06:00

Peak Areas, mv-sec

28200	16074	not	not
27714	15989	used	used
27544	15970		
Average Area	27819 ✓	16011 ✓	

2 Flow = 59.5 mL/Min 5.90 ppm 6.20 ppm 8.02 ppm 4.06 ppm

Time: 06:49

Peak Areas, mv-sec

7504	3841	12348	15296
7611	3774	12960	15012
7641	3823	12909	15325
Average Area	7585 ✓	3813 ✓	12739 ✓

3 Flow = 131 mL/Min 2.68 ppm 2.82 ppm 3.64 ppm 1.84 ppm

Time: 07:28

Peak Areas, mv-sec

1734	856	2868	3422
1702	845	2771	3379
1690	846	2788	3411
Average Area	1709 ✓	849 ✓	2809 ✓

4 Flow = 271 mL/Min 1.30 ppm 1.36 ppm 1.76 ppm 0.89 ppm

Time: 07:53

Peak Areas, mv-sec

440	204	681	847
433	209	682	842
472	206	671	834
Average Area	448 ✓	206 ✓	678 ✓

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

H₂S	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	12.8	5.90	2.68	1.30		
Area, mv-sec	27819	7585	1709	448		
Calc. Conc., ppm	12.5	6.11	2.68	1.28		
% Error	-2.3	3.5	0.0	-1.2		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8102	2.4572	0.9997	2	0.064	
MeSH	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	13.5	6.20	2.82	1.36		
Area, mv-sec	16011	3813	849	206		
Calc. Conc., ppm	13.3	6.26	2.84	1.35		
% Error	-0.9	1.0	0.9	-0.9		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8989	2.0680	0.9999	2	0.12	
DMS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	8.02	3.64	1.76			
Area, mv-sec	12739	2809	678			
Calc. Conc., ppm	17.6	7.86	3.68			
% Error	119.4	115.7	109.0			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8747	1.7700	0.9997	2	0.16	
DMDS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	4.06	1.84	0.89			
Area, mv-sec	15211	3404	841			
Calc. Conc., ppm	8.91	3.97	1.86			
% Error	119.6	115.3	109.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8501	2.4250	0.9997	2	0.071	

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Ambient Temperature: 72°C

Barometric Pressure: 29.25 in. Hg

Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 37.6 mL/Min **9.34 ppm** **9.81 ppm** **12.7 ppm** **6.42 ppm**

Time: 07:00

Peak Areas, mv-sec

19790	9921	31382	38948
20319	10076	31742	38693
19852	9986	30214	37936
19987	9995	31113	38526

2 Flow = 82.8 mL/Min **4.24 ppm** **4.46 ppm** **5.77 ppm** **2.92 ppm**

Time: 11:03

Peak Areas, mv-sec

4788	2266	7435	8918
4588	2209	7188	8687
4419	2218	7198	8791
4598	2231	7274	8798

3 Flow = 180 mL/Min **1.95 ppm** **2.05 ppm** **2.66 ppm** **1.34 ppm**

Time: 11:47

Peak Areas, mv-sec

998	492	1607	1968
985	496	1607	1963
982	497	1614	1971
988	495	1609	1967

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CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

H₂S	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.34	4.24	1.95		
Area, mv-sec	19987	4598	988		
Calc. Conc., ppm	9.26	4.31	1.94		
% Error	-0.8	1.6	-0.8		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9212	2.4433	0.9998	2	0.077
MeSH	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.81	4.46	2.05		
Area, mv-sec	9995	2231	495		
Calc. Conc., ppm	9.79	4.48	2.05		
% Error	-0.3	0.5	-0.3		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9203	2.0975	>0.9999	2	0.12
DMS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	12.7	5.77	2.66		
Area, mv-sec	31113	7274	1609		
Calc. Conc., ppm	12.6	5.85	2.64		
% Error	-0.7	1.4	-0.7		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8927	2.4098	0.9999	2	0.077
DMDS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	6.42	2.92	1.34		
Area, mv-sec	38526	8798	1967		
Calc. Conc., ppm	6.39	2.94	1.34		
% Error	-0.4	0.8	-0.4		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9009	3.0543	>0.9999	2	0.036

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ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483	716	1197	918
Permeation Rate, nL/min*	351	369	477	241

Barometric Pressure: 29.25 in. Hg Ambient Temperature: 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.25) \\ = 351 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, NC**
Source: **#1 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **22 Jun 2021**

File: C:\Data\210623 New Indy Catawba No. 1 CB.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061
Detector Range: 10

Gases			Temperatures, °C	Columns
	Press.	Flow		
	psi	mL/min		
H ₂	30	50	Column: 140	Primary: Carbopack
Air	30	60	Detector: 140	Secondary: N/A
Carrier	50	30		Sample Loop: 4"

Injection Cycle

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.25 in. Hg

RUN SUMMARY

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 18:24 to 19:24

Run Averages

11.2	8.2	304
------	-----	-----

Pre-run Bias at 16:43

Zero Bias	0.0	0.0	8
Span Bias	10.0	10.1	234
Span Gas	10.1	10.2	242

Post-run Bias at 19:27

Zero Bias	0.0	0.0	7
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.4 ✓	8.3 ✓	313 ✓
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RUN SUMMARY

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 20:19 to 21:19

Run Averages

11.7	7.7	342
------	-----	-----

Pre-run Bias at 19:27

Zero Bias	0.0	0.0	7
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

Post-run Bias at 21:26

Zero Bias	0.0	0.0	4
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.9	✓	7.8	✓	348	✓
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RUN SUMMARY

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 22:02 to 23:02

Run Averages

11.5	8.1	340
------	-----	-----

Pre-run Bias at 21:26

Zero Bias	0.0	0.0	4
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

Post-run Bias at 23:05

Zero Bias	0.0	0.0	3
Span Bias	10.0	10.2	234
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.6 ✓	8.1 ✓	349 ✓
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RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs						
18:25	3619	10.9	3462	8.6	2834	283
18:26	3597	10.8	3490	8.6	2890	289
18:27	3632	10.9	3514	8.7	3019	302
18:28	3736	11.2	3454	8.6	2939	294
18:29	3743	11.2	3343	8.3	2831	283
18:30	3786	11.4	3340	8.3	2799	280
18:31	3778	11.4	3290	8.1	2774	278
18:32	3808	11.4	3289	8.1	2802	280
18:33	3735	11.2	3268	8.1	2860	286
18:34	3656	11.0	3362	8.3	3089	309
18:35	3609	10.8	3449	8.5	3124	312
18:36	3645	11.0	3484	8.6	3073	307
18:37	3785	11.4	3424	8.5	2834	283
18:38	3777	11.4	3290	8.1	2904	290
18:39	3804	11.4	3285	8.1	2907	291
18:40	3718	11.2	3264	8.1	2895	290
18:41	3690	11.1	3351	8.3	3093	309
18:42	3686	11.1	3407	8.4	3117	312
18:43	3696	11.1	3388	8.4	3011	301
18:44	3722	11.2	3371	8.3	3035	304
18:45	3805	11.4	3340	8.3	2989	299
18:46	3854	11.6	3235	8.0	2951	295
18:47	3785	11.4	3209	7.9	2977	298
18:48	3779	11.4	3286	8.1	2943	294
18:49	3850	11.6	3265	8.1	3179	318
18:50	3762	11.3	3224	8.0	3171	317
18:51	3752	11.3	3303	8.2	3078	308
18:52	3743	11.2	3328	8.2	2932	293
18:53	3767	11.3	3329	8.2	2943	294
18:54	3817	11.5	3300	8.2	2907	291
18:55	3971	11.9	3223	8.0	2931	293
18:56	3965	11.9	3060	7.6	3159	316
18:57	3931	11.8	3059	7.6	3147	315
18:58	3776	11.3	3123	7.7	3151	315
18:59	3823	11.5	3263	8.1	2999	300
19:00	3894	11.7	3204	7.9	2846	285
19:01	3840	11.5	3146	7.8	2853	285
19:02	3800	11.4	3212	8.0	2855	286
19:03	3845	11.6	3258	8.1	3066	307
19:04	3895	11.7	3188	7.9	3102	310

RUN DATA

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
19:05	3903	11.7	3137	7.8	3182	318
19:06	3929	11.8	3117	7.7	3008	301
19:07	3885	11.7	3108	7.7	2900	290
19:08	3825	11.5	3165	7.8	2940	294
19:09	3735	11.2	3242	8.0	2885	289
19:10	3711	11.2	3328	8.2	3079	308
19:11	3631	10.9	3363	8.3	3211	321
19:12	3560	10.7	3452	8.5	3362	336
19:13	3537	10.6	3508	8.7	3482	348
19:14	3508	10.5	3541	8.8	3373	337
19:15	3551	10.7	3564	8.8	3320	332
19:16	3619	10.9	3505	8.7	3287	329
19:17	3665	11.0	3436	8.5	3239	324
19:18	3700	11.1	3387	8.4	3060	306
19:19	3660	11.0	3378	8.4	3177	318
19:20	3705	11.1	3392	8.4	3291	329
19:21	3721	11.2	3370	8.3	3272	327
19:22	3700	11.1	3333	8.3	3148	315
19:23	3610	10.8	3373	8.4	3082	308
19:24	3517	10.6	3499	8.7	3096	310
Avg	3742	11.2	3321	8.2	3040	304

RUN DATA

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂ mv	%	CO ₂ mv	%	SO ₂ mv	ppm
With NCGs						
20:20	3956	11.9	3038	7.5	3579	358
20:21	3924	11.8	3098	7.7	3395	340
20:22	3929	11.8	3122	7.7	3279	328
20:23	4008	12.0	3112	7.7	3315	332
20:24	4084	12.3	3018	7.5	3351	335
20:25	4065	12.2	2954	7.3	3630	363
20:26	4084	12.3	2958	7.3	3573	357
20:27	4072	12.2	2961	7.3	3514	351
20:28	4153	12.5	2959	7.3	3362	336
20:29	4171	12.5	2872	7.1	3369	337
20:30	4044	12.2	2857	7.1	3410	341
20:31	3988	12.0	2950	7.3	3362	336
20:32	3990	12.0	2998	7.4	3267	327
20:33	3969	11.9	2992	7.4	3560	356
20:34	3943	11.8	3019	7.5	3537	354
20:35	3971	11.9	3035	7.5	3592	359
20:36	3934	11.8	3019	7.5	3468	347
20:37	3991	12.0	3044	7.5	3319	332
20:38	4000	12.0	2989	7.4	3404	340
20:39	3953	11.9	2981	7.4	3454	345
20:40	3971	11.9	3036	7.5	3310	331
20:41	4056	12.2	3000	7.4	3318	332
20:42	4112	12.4	2902	7.2	3348	335
20:43	4009	12.0	2864	7.1	3545	355
20:44	4022	12.1	2939	7.3	3770	377
20:45	4027	12.1	2902	7.2	3729	373
20:46	4034	12.1	2870	7.1	3641	364
20:47	3964	11.9	2843	7.0	3487	349
20:48	3886	11.7	2936	7.3	3469	347
20:49	3797	11.4	3030	7.5	3553	355
20:50	3801	11.4	3109	7.7	3451	345
20:51	3768	11.3	3120	7.7	3428	343
20:52	3639	10.9	3223	8.0	3434	343
20:53	3636	10.9	3370	8.3	3400	340
20:54	3766	11.3	3370	8.3	3361	336
20:55	3847	11.6	3259	8.1	3411	341
20:56	3799	11.4	3185	7.9	3420	342
20:57	3728	11.2	3255	8.1	3504	350
20:58	3684	11.1	3338	8.3	3512	351
20:59	3656	11.0	3394	8.4	3477	348

RUN DATA

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
21:00	3787	11.4	3427	8.5	3314	331
21:01	3885	11.7	3278	8.1	3325	333
21:02	3882	11.7	3206	7.9	3290	329
21:03	3886	11.7	3198	7.9	3331	333
21:04	3864	11.6	3209	7.9	3355	336
21:05	3808	11.4	3226	8.0	3328	333
21:06	3745	11.3	3295	8.2	3338	334
21:07	3685	11.1	3379	8.4	3344	334
21:08	3694	11.1	3433	8.5	3353	335
21:09	3773	11.3	3427	8.5	3305	331
21:10	3853	11.6	3327	8.2	3342	334
21:11	3950	11.9	3240	8.0	3311	331
21:12	4017	12.1	3118	7.7	3392	339
21:13	3936	11.8	3052	7.6	3427	343
21:14	3850	11.6	3122	7.7	3324	332
21:15	3843	11.5	3208	7.9	3376	338
21:16	3806	11.4	3212	8.0	3385	339
21:17	3814	11.5	3259	8.1	3365	337
21:18	3661	11.0	3273	8.1	3347	335
21:19	3639	10.9	3428	8.5	3435	344
Avg	3897	11.7	3121	7.7	3422	342

RUN DATA

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs						
22:03	3783	11.4	3378	8.4	3499	350
22:04	3827	11.5	3287	8.1	3478	348
22:05	3799	11.4	3284	8.1	3441	344
22:06	3903	11.7	3265	8.1	3620	362
22:07	3885	11.7	3171	7.8	3452	345
22:08	3946	11.9	3173	7.9	3625	362
22:09	3995	12.0	3108	7.7	3377	338
22:10	3937	11.8	3066	7.6	3743	374
22:11	3913	11.8	3121	7.7	3484	348
22:12	3919	11.8	3149	7.8	3695	369
22:13	4001	12.0	3130	7.7	3397	340
22:14	3960	11.9	3053	7.6	3731	373
22:15	3924	11.8	3096	7.7	3490	349
22:16	3988	12.0	3134	7.8	3681	368
22:17	3995	12.0	3061	7.6	3401	340
22:18	3987	12.0	3050	7.5	3693	369
22:19	3942	11.8	3042	7.5	3534	353
22:20	3863	11.6	3099	7.7	3747	375
22:21	3882	11.7	3164	7.8	3551	355
22:22	3836	11.5	3156	7.8	3682	368
22:23	3719	11.2	3226	8.0	3364	336
22:24	3661	11.0	3350	8.3	3814	381
22:25	3671	11.0	3422	8.5	3662	366
22:26	3758	11.3	3379	8.4	3452	345
22:27	3744	11.3	3303	8.2	3443	344
22:28	3664	11.0	3344	8.3	3567	357
22:29	3639	10.9	3427	8.5	3384	338
22:30	3708	11.1	3438	8.5	3441	344
22:31	3762	11.3	3362	8.3	3397	340
22:32	3760	11.3	3302	8.2	3484	348
22:33	3739	11.2	3320	8.2	3207	321
22:34	3794	11.4	3316	8.2	3418	342
22:35	3790	11.4	3259	8.1	3201	320
22:36	3766	11.3	3282	8.1	3358	336
22:37	3843	11.5	3292	8.2	3155	316
22:38	3806	11.4	3222	8.0	3431	343
22:39	3791	11.4	3260	8.1	3226	323
22:40	3770	11.3	3282	8.1	3436	344
22:41	3739	11.2	3297	8.2	3194	319
22:42	3751	11.3	3334	8.3	3436	344

RUN DATA

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
22:43	3700	11.1	3326	8.2	3191	319
22:44	3696	11.1	3400	8.4	3382	338
22:45	3748	11.3	3372	8.3	3201	320
22:46	3738	11.2	3342	8.3	3358	336
22:47	3778	11.4	3339	8.3	3122	312
22:48	3787	11.4	3295	8.2	3252	325
22:49	3747	11.3	3299	8.2	3253	325
22:50	3784	11.4	3320	8.2	3166	317
22:51	3745	11.3	3311	8.2	3005	301
22:52	3796	11.4	3327	8.2	3280	328
22:53	3776	11.3	3279	8.1	3106	311
22:54	3785	11.4	3286	8.1	3386	339
22:55	3843	11.5	3277	8.1	3171	317
22:56	3787	11.4	3233	8.0	3267	327
22:57	3858	11.6	3256	8.1	3106	311
22:58	3805	11.4	3208	7.9	3292	329
22:59	3790	11.4	3271	8.1	3170	317
23:00	3860	11.6	3270	8.1	3222	322
23:01	3883	11.7	3196	7.9	3166	317
23:02	3897	11.7	3187	7.9	3246	325
Avg	3816	11.5	3253	8.1	3396	340

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 16:43

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.1	3335	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.0	3335	10.0	0.0	0.0 ✓	Pass

*Bias No. 4

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	12	0.0	0.0	0.0 ✓	Pass
Span	10.2	4067	10.1	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	12	0.0	0.0	0.0 ✓	Pass
Span	10.2	4067	10.1	-0.1	-0.5 ✓	Pass

*Bias No. 4

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BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 16:43

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	79	8	7	1.5	Pass
Span	239	2341	234	-5	-1.1	Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	5	79	8	3	0.7	Pass
Span	232	2341	234	2	0.4	Pass

*Bias No. 4

BIAS AND CALIBRATION DRIFT

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 19:27

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	8	0.0	0.0	0.0 ✓	Pass
Span	10.1	3314	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	8	0.0	0.0	0.0 ✓	Pass
Span	10.0	3314	10.0	0.0	0.0 ✓	Pass

*Bias No. 5

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	5	0.0	0.0	0.0 ✓	Pass
Span	10.2	4061	10.1	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	5	0.0	0.0	0.0 ✓	Pass
Span	10.1	4061	10.1	0.0	0.0 ✓	Pass

*Bias No. 5

BIAS AND CALIBRATION DRIFT

Number 6

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 19:27

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	70	7	6	1.3 ✓	Pass
Span	239	2397	240	1	0.2 ✓	Pass

Calibration Drift							
Standard	Initial*		Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	ppm	%		
Zero	8	70	7	-1	-0.2	✓	Pass
Span	234	2397	240	6	1.3	✓	Pass
*Bias No. 5							

*Bias No. 5

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BIAS AND CALIBRATION DRIFT

Number 7

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 21:26

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	2	0.0	0.0	0.0 ✓	Pass
Span	10.1	3323	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	%	mv	%	%	%	
Zero	0.0	2	0.0	0.0	0.0	✓ Pass
Span	10.0	3323	10.0	0.0	0.0	✓ Pass
*Bias No. 6						

*Bias No. 6

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.2	4056	10.1	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final		Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.1	4056	10.1	0.0	0.0 ✓	Pass

*Bias No. 6

BIAS AND CALIBRATION DRIFT

Number 7

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 21:26

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	40	4	3	0.7	✓ Pass
Span	239	2396	240	1	0.2	✓ Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	ppm	mv	ppm	ppm	%	
Zero	7	40	4	-3	-0.7	✓ Pass
Span	240	2396	240	0	0.0	✓ Pass

*Bias No. 6

BIAS AND CALIBRATION DRIFT

Number 8

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 23:05

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	8	0.0	0.0	0.0 ✓	Pass
Span	10.1	3341	10.0	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	8	0.0	0.0	0.0 ✓	Pass
Span	10.0	3341	10.0	0.0	0.0 ✓	Pass

*Bias No. 7

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	21	0.0	0.0	0.0 ✓	Pass
Span	10.2	4100	10.2	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	21	0.0	0.0	0.0 ✓	Pass
Span	10.1	4100	10.2	0.1	0.5 ✓	Pass

*Bias No. 7

BIAS AND CALIBRATION DRIFT

Number 8

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 23:05

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	1	29	3	2	0.4 ✓	Pass
Span	239	2337	234	-5	-1.1 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	ppm	mv	ppm	ppm	%	
Zero	4	29	3	-1	-0.2 ✓	Pass
Span	240	2337	234	-6	-1.3 ✓	Pass

*Bias No. 7

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 08:37

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	3
10.1 ✓	XC013544B	3354
20.2 ✓	CC275468	6750

Curve Coefficients

Slope	Intercept	Corr. Coeff.
333.3 ✓	-7 ✓	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	4
10.2 ✓	XC013544B	4128
20.3 ✓	CC275468	8145

Curve Coefficients

Slope	Intercept	Corr. Coeff.
401.6 ✓	18 ✓	>0.9999 ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 08:37

SO₂

Method: EPA 6C

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero	-	9
242	CC234516	2392
458	EB0108003	4596

Curve Coefficients

Slope	Intercept	Corr. Coeff.
10.01	-5	0.9999

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CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Start Time: 08:37

O₂

Method: EPA 3A

Span Conc. 20.2 %

Slope 333.3

Intercept -6.7

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	3	0.0	0.0	0.0 ✓	Pass
10.1	3354	10.1	0.0	0.0 ✓	Pass
20.2	6750	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.3 %

Slope 401.6

Intercept 18.5

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	4	0.0	0.0	0.0 ✓	Pass
10.2	4128	10.2	0.0	0.0 ✓	Pass
20.3	8145	20.2	-0.1	-0.5 ✓	Pass

SO₂

Method: EPA 6C

Span Conc. 458 ppm

Slope 10.01

Intercept -5

Standard	Response	Result	Difference	Error	Status
ppm	mv	ppm	ppm	%	
Zero	9	1	1	0.2 ✓	Pass
242	2392	239	-3	-0.7 ✓	Pass
458	4596	459	1	0.2 ✓	Pass

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

File: K:\15730 New Indy\001 Catawba SC\008\Data\210623 New Indy Catawba No. 1 CBb.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: WSAUBCHEMLABGC1 Trailer: 281

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 2

Analyte	CO ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.3

Channel 5

Analyte	SO ₂
Method	EPA 6C, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T100H SN 374
Full-Scale Output, mv	10000
Analyzer Range, ppm	500
Span Concentration, ppm	458



**No. 2 COMBINATION BOILER
(CONDITION 1: NCG AND SOG GASES)**

New Indy
Catawba, SC

15730.001.008
No. 2 Combination Boiler
Condition 1: NCGs & SOGs

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	---
Time Began	1445	1630	1806	---
Time Ended	1545	1730	1906	---
Volumetric Flow Rate, (Qs), DSCFM	1.57E+05 ✓	1.56E+05 ✓	1.54E+05 ✓	1.56E+05 ✓
BWS	0.135 ✓	0.141 ✓	0.148 ✓	0.141 ✓
% Oxygen	13.1 ✓	12.7 ✓	12.3 ✓	12.7 ✓
Recovery, %	89.5 ✓	89.5 ✓	89.5 ✓	89.5 ✓
<hr/>				
Sulfur Dioxide				
MW= 64.06				
Concentration, ppm	324.0 ✓	327.0 ✓	322.0 ✓	324.3 ✓
Emission Rate, lb/hr	508.7	507.2	496.1	504.0
<hr/>				
Total Reduced Sulfur				
(TRS MW)= 34.08				
Concentration, ppm	1.13 ✓	0.97 ✓	0.97 ✓	1.02 ✓
Emission Rate, lb/hr	0.94	0.80	0.80	0.85
<hr/>				
H2S				
(H2S MW)= 34.08				
Concentration, ppm	0.08 ✓	0.08 ✓	0.08 ✓	0.08 ✓
Concentration, ppm (Corrected for Recovery)	0.09	0.09	0.09	0.09
Emission Rate, lb/hr	0.07	0.07	0.07	0.07

New Indy
Catawba, SC

15730.001.008
No. 2 Combination Boiler

Condition 1: NCGs & SOGs

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/24/21 ✓	6/24/21 ✓	6/24/21 ✓	---
Time Began	1445 ✓	1630 ✓	1806 ✓	---
Time Ended	1607 ✓	1754 ✓	1931 ✓	---

INPUT DATA

Sampling Time, min	(Theta)	64.0 ✓	64 ✓	64 ✓	64
Stack Diameter, in.	(Dia.)	120.00 ✓	120.00 ✓	120.00 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.65 ✓	29.65 ✓	29.65 ✓	29.65
Static Pressure, in. H2O	(Pg)	-0.60 ✓	-0.60 ✓	-0.60 ✓	-0.60
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	0.9880 ✓	0.9880 ✓	0.9880 ✓	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 ✓	1.7320 ✓	1.7320 ✓	1.7320
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	42.480 ✓	42.755 ✓	42.602 ✓	42.612
Meter Temperature, °F	(Tm)	89.8 ✓	95.3 ✓	94.8 ✓	93.3
Meter Temperature, °R	(Tm-R)	549.8	555.3	554.8	553.3
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	133.3 ✓	138.7 ✓	147.2 ✓	139.7
CO2 Concentration, %	(CO2)	6.6 ✓	6.9 ✓	7.3 ✓	6.9
O2 Concentration, %	(O2)	13.1 ✓	12.7 ✓	12.3 ✓	12.7
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	0.907 ✓	0.900 ✓	0.904 ✓	0.904
Stack Temperature, °F	(Ts)	475.1 ✓	473.7 ✓	479.1 ✓	476.0
Stack Temperature, °R	(Ts-R)	935.1	933.7	939.1	936.0

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	78.54 ✓	78.54 ✓	78.54 ✓	78.54
Stack Pressure, in. Hg	(Ps)	29.61	29.61	29.61	29.61
Meter Pressure, in. Hg	(Pm)	29.75	29.75	29.75	29.75
Standard Meter Volume, ft ³	(Vmstd)	40.054	39.919	39.807	39.927
Standard Water Volume, ft ³	(Vwstd)	6.274	6.529	6.929	6.577
Moisture Fraction (Measured)	(BWS)	0.135	0.141	0.148	0.141
Moisture Fraction (lower sat/meas)	(BWS)	0.135	0.141	0.148	0.141
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.58	29.61	29.66	29.62
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	28.01	27.98	27.93	27.97
Average Stack Gas Velocity, ft/sec	(Vs)	69.18	68.65	69.21	69.01
Stack Gas Flow, actual, ft ³ /min	(Qa)	326023	323490	326155	325223
Stack Gas Flow, Std, ft ³ /min	(Qs)	157429	155507	154485	155807

Calibration check	(Yqa)	0.9922	0.9902	0.9925	0.992
Percent difference from Y					0.37%

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Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Combination Boiler
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/24/21
 Test Personnel ATL/CL
 Sample Time 6:48 AM min. 64

Console ID A010 Ambient Temp. 90 °F
 Meter Corr., Y .988 Baro. Pressure* 29.65 in. Hg
 Console ΔH@ 1.732 Static Pressure - .60 in. H₂O
 Probe ID/Length P05B Impinger Gain 120.6 mL
 Liner Material SS Silica Gel Gain 12.7 g
 Pitot ID/Coeff. P172 0.84
 Thermo ID A010 Stack Area 78.54 ft²
 Nozzle ID/Diams. .230 in. Total Traverse Points 16
 Avg. Nozzle Diam. .250 in.


K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	.004	.001
Pitot	.000	.000

Filter ID NA
 Sample ID Run 1 w/ NLG+SCG

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DCM INLET TEMP (°F)	DCM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
A-1 C	34	14:45	.91	1.3	94.960	485		87	244	256		65	1.5	
2	8		.89	1.3	100.1	485		86	252	255		63	1.5	
3	912		.85	1.3	102.7	484		87	253	254		61	1.5	
4	1216	15:01	.78	1.3	105.4	479		87	251	255		61	1.5	
B-1 D	1520	15:07	.90	1.3	108.1	479		88	252	256		64	1.5	
2	1824		.91	1.3	110.7	480		89	250	255		61	1.5	
3	2126		.89	1.3	113.0	478		89	249	254		60	1.5	
4	2432	15:23	.83	1.3	116.1	475		90	247	255		60	1.5	
A-1 A	2736	15:27	.81	1.3	118.8	474		90	246	256		64	1.5	
2	3046	15:28	.81	1.3	121.6	470		91	245	257		62	1.5	
3	3344		.85	1.3	124.1	468		91	246	255		60	1.5	
4	3648	15:43	.75	1.3	126.7	468		91	247	256		61	1.5	
B-1 B	3952	15:51	.82	1.3	129.6	467		91	248	255		65	1.5	
?	4256		.73	1.3	132.0	469		93	249	256		63	1.5	
3	4560		.70	1.3	134.8	470		93	251	256		64	1.5	
4	4864	16:07	.67	1.3	137.3	470		94	250	257		64	1.5	
*Barometric Pressure is at port elevation					Avg Δp <u>.9073</u>	Avg ΔH <u>1.3</u>	Avg T _s <u>475.06</u>	Avg T _m <u>89.81</u>	Min/Max <u>245/433</u>	Min/Max <u>254/257</u>	Min/Max <u>65</u>	Max Temp <u>65</u>	Max Vac <u>1.5</u>	V _{m-std} <u>✓</u> scf



Integrated Air Services

Flue Gas Composition

Oxygen, % 82.5

Carbon Dioxide, % 1.140

Moisture, % 1.506

O₂/CO₂ by Orsat Fyrite M3A

Leak Check, Pre-run ✓

Post-run ✓

Thermocouple Check

Meter Temp., °F 65

Ref. Temp., °F 65

Result ✓

Q_s dscfm ✓

% Isokinetic ✓

Calculated by ✓

QC by ✓

Comments w/ NLG+SCG

15730.001.008

Pulse Dryer, #1 Super Machine, #2-3 Sub V's, & #1-2 CBs

Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Combination Boiler
 Sample Location Stackhouse
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/24/21
 Test Personnel AR/CL
 Sample Time 48 min.

Console ID A010
 Meter Corr., Y 986
 Console ΔH@ 1.732
 Probe ID/Length PA53
 Liner Material 51
 Pitot ID/Coeff. 0.84
 Thermo ID A010
 Nozzle ID/Diams. 1.250 in.
 Avg. Nozzle Diam. 1.250 in.

Ambient Temp. 90 °F
 Baro. Pressure* 29.65 in. Hg
 Static Pressure -60 in. H₂O
 Impinger Gain 120.6 mL
 Silica Gel Gain 13.7 g
 Stack Area 78.54 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	.003	.000
Pitot	.800	.5

Filter ID NA
 Sample ID RUN2 w/ NLG+50G

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
1	34	16:30	.90	1.3	137.600	475		94	232	256		64	2	
2	38		.87	1.3	142.4	474		94	231	255		62	2	
3	312		.83	1.3	145.6	473		95	230	256		61	2	
4	1216	16:46	.77	1.3	148.2	472		95	232	257		64	2.5	
1	1520	16:51	.91	1.3	150.8	471		95	233	256		65	2.5	
2	1824		.90	1.3	153.6	473		95	235	252		65	2.5	
3	2128		.92	1.3	156.2	474		96	234	250		64	2.5	
4	2432	17:07	.85	1.3	158.9	474		96	235	252		65	2.5	
1	2736	17:12	.80	1.3	161.4	473		46	236	253		63	2.5	
2	3040		.73	1.3	164.3	474		46	237	252		57	2.5	
3	3344		.77	1.3	167.2	474		45	236	250		55	2.5	
4	3648	17:28	.70	1.3	169.6	474		46	237	250		53	3	
1	3952	17:38	.85	1.3	172.4	474		45	236	251		62	3	
2	4256		.80	1.3	174.9	475		46	236	232		56	3	
3	4560		.72	1.3	177.7	474		45	235	231		55	3	
4	4864	17:54	.68	1.3	180.355	475		45	236	250		55	3	
*Barometric Pressure is at port elevation														
			Avg ΔP	Avg ΔH	Total Volume	Avg T.	Avg T.	Avg T.	Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	V _{m-std} scf
			1.9003	1.3	42.755	473.6	473.6	473.6	235	250	250	65	3	
			1.8125	1.40										



Flue Gas Composition
 Oxygen, %
 Carbon Dioxide, %
 Moisture, %
 O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run
 Thermocouple Check
 Meter Temp., °F
 % Isokinetic
 Ref. Temp., °F
 Calculated by
 QC by

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Combination Boiler
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/24/21
 Test Personnel AL/LL
 Sample Time 48 min.

Console ID A610
 Meter Corr., Y 988
 Console ΔH@ 1.732
 Probe ID/Length PL5B 5'
 Liner Material SS
 Pitot ID/Coeff. .84
 Thermo ID A016
 Nozzle ID/Diams. .250
 Avg. Nozzle Diam. .250 in.

Ambient Temp. 95 °F
 Baro. Pressure* 24.65 in. Hg
 Static Pressure -60 in. H₂O
 Impinger Gain 134.5 mL
 Silica Gel Gain 12.7 g
 Stack Area 78.54 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>.003</u>	<u>.000</u>
Pitot	<u>8</u>	<u>5</u>

Filter ID NA

Sample ID Bun3 w/ NLG+SCG

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
1 C	34	18:06	.40	1.3	182.7	476		94	248	251		64	2	
2	38		.89	1.3	185.0	477		94	249	252		63	2	
3	312		.86	1.3	188.7	476		95	250	253		61	2	
4	1216	18:22	.80	1.3	191.3	475		95	251	252		57	2	
1 D	1326	18:28	.88	1.3	193.9	480		96	250	255		63	2	
2	1824		.96	1.3	196.8	481		96	250	256		57	2	
3	2128		.88	1.3	198.4	482		95	249	256		56	2	
4	2432	18:44	.81	1.3	202.3	478		95	250	255		57	2.5	
1 A	2736	18:50	.82	1.3	204.8	479		95	252	257		65	2.5	
2	3040		.82	1.3	207.5	480		94	250	258		59	2.5	
3	3344		.95	1.3	210.3	484		95	250	256		59	2.5	
4	3648	19:06	.70	1.3	212.7	485		96	251	256		60	2.5	
1 B	3952	19:12	.80	1.3	215.4	478		95	250	253		63	2.5	
2	4256	19:15	.80	1.3	218.0	479		94	250	253		61	2.5	
3	4560		.70	1.3	220.7	478		94	249	254		63	2.5	
4	4864	19:31	.70	1.3	223.402	478		94	244	255		64	2.5	
*Barometric Pressure is at port elevation			Avg ΔP	Avg ΔH	Total Volume	Avg T _g	Avg T _m		Min/Max	Min/Max	Min/Max	Max Temp	Max Vac	
			<u>.9044</u>	<u>1.3</u>	<u>42.602</u>	<u>479.125</u>	<u>44.81</u>		<u>248.75</u>	<u>251.258</u>	<u>251.258</u>	<u>65</u>	<u>2.5</u>	
														m-sld, scf



Integrated Air Services

Flue Gas Composition
 Oxygen, %
 Carbon Dioxide, %
 Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

Q_s, dscfm
 % Isokinetic
 Calculated by
 QC by

15730.001.008
 Pump Driver, #3 Paper Machine,
 #3 SDTVs, & #1-2 CBs
 Emission Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 2 Combination Boiler
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID Run 4 w/ NLG + SOG Filter ID NA Analyst ATR

	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	995.1	771.4	643.0		858.1	
Initial	898.4	751.2	639.3		845.4	
Gain	96.7	20.2	3.7	120.6	12.7	133.3

Impinger Color clear Lable I? ✓
Silica Gel Condition used Sealed? ✓

Run No. 2 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID Run 2 w/ NLG + SOG Filter ID NA Analyst ATR

	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	799.6	786.9	657.0		903.4	
Initial	697.0	761.5	654.0		889.7	
Gain	102.6	19.4	3	125	13.7	138.7

Impinger Color clear Lable I? ✓
Silica Gel Condition used Sealed? ✓

Run No. 3 Sample Date 6/24/21 Recovery Date 6/24/21
Sample ID Run 3 w/ NLG + SOG Filter ID NA Analyst ATR

	Impingers			Imp. Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	830.5	793.5	640.3		847.3	
Initial	713.3	779.5	643.0		834.6	
Gain	117.2	14	3.3	134.5	12.7	147.2

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Check COC for Sample IDs of Media Blanks



Sample and Velocity Traverse Points - Method 1

Client New Indy
Location/Plant Catawba, SC
Operator VB

Source No. 2 Combination Boiler
W.O. Number 15730.001.008
Date 6/24/21

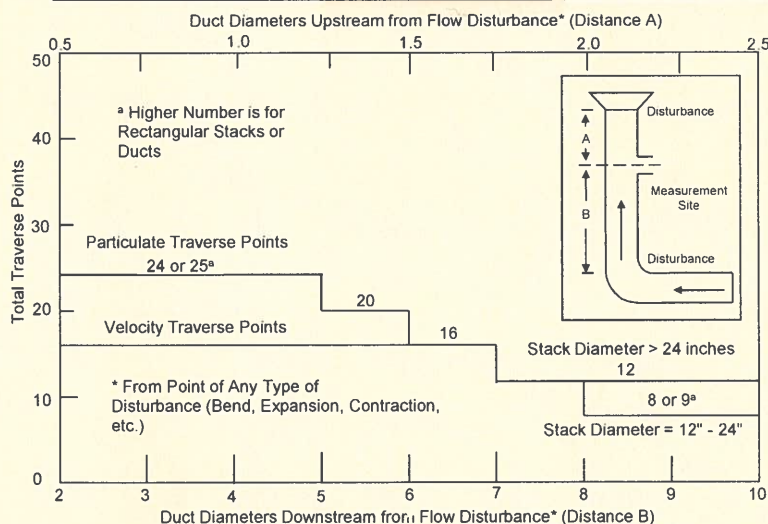
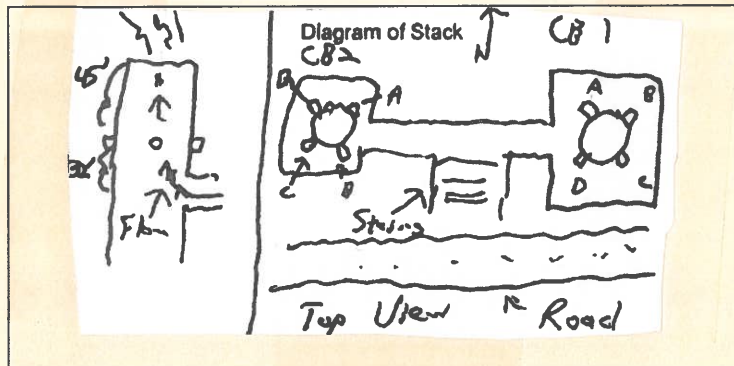
Duct Type ☒ Circular ☐ Rectangular
Traverse Type ☐ Particulate Traverse ☒ Velocity Traverse ☐ Stratification Traverse

Depth, far wall to outside of port (in) = C	129
Port Depth (in) = D	9
Depth of Duct, diameter (in) = C - D	120
Area of Duct (ft ³)	78.54
Number of Ports	4
Traverse Points per Port	4
Total Traverse Points	16

Rectangular Ducts Only	
Width of Duct (in)	
Equivalent Diameter (in)	

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	3.9	12.9
2	10.5	12.6	21.6
3	19.4	23.3	32.3
4	32.3	38.8	47.8

Flow Disturbances	
Upstream - A (ft)	45
Downstream - B (ft)	32
Upstream - A (duct diameters)	4.5
Downstream - B (duct diameters)	3.2



Traverse Point Location % of Stack - Circular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25.0		14.6		10.5		8.2		6.7
3			75.0		29.6		19.4		14.6		11.8	
4				93.3		70.4		32.3		22.6		17.7
5					85.4		67.7		34.2		25.0	
6						95.6		80.6		65.8		35.6
7							89.5		77.4		64.4	
8								96.8		85.4		75.0
9									91.8		82.3	
10										97.4		88.2
11											93.3	
12												97.9

Traverse Point Location % of Stack - Rectangular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular Stack Points & Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Tape measure ID _____

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 14:45 End Time 15:45

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.92~~ 1.01

0.82 ppm

89.5 %

~~0.92~~ ppm

~~1.02~~

1.13

AB
9/29 ✓

AB
9/15 ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 16:30 End Time 17:30

Average Measured TRS Conc.
Recovery No. 2
TRS Corrected for Recovery

~~0.77~~ 0.87

0.68 ppm

89.5 %

0.76 ppm

~~0.86~~
0.97

AB
9/29 ✓

AB
9/15 ✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time 18:06 End Time 19:07

Average Measured TRS Conc.

Recovery No. 2

TRS Corrected for Recovery

~~0.78~~ 0.87

0.69 ppm

89.5 %

~~0.77~~ ppm

~~0.87~~
0.97

#3
9/25 ✓

#3
9/15 ✓

RUN DATA

Number 1

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler
Project Number: 15730.001.008
Operator: VD
Date: 24 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
14:45	2	0.08		59	0.68		<2		0.077	<2		0.036	0.91
14:48	3	0.10		57	0.66		<2		0.077	<2		0.036	0.91
14:51	2	0.08		57	0.66		<2		0.077	<2		0.036	0.89
14:54	3	0.09		58	0.67		<2		0.077	<2		0.036	0.91
14:57	<2		0.077	58	0.67		<2		0.077	<2		0.036	0.89
15:00	<2		0.077	55	0.65		<2		0.077	<2		0.036	0.88
15:03	<2		0.077	56	0.66		<2		0.077	<2		0.036	0.88
15:06	<2		0.077	53	0.64		<2		0.077	2	0.04		0.87
15:09	2	0.09		59	0.67		<2		0.077	<2		0.036	0.91
15:12	3	0.09		62	0.69		<2		0.077	<2		0.036	0.93
15:15	<2		0.077	90	0.84		<2		0.077	<2		0.036	1.07
15:18	3	0.09		77	0.78		<2		0.077	<2		0.036	1.01
15:21	<2		0.077	90	0.84		<2		0.077	<2		0.036	1.07
15:24	<2		0.077	144	1.08		<2		0.077	<2		0.036	1.30
15:27	3	0.10		115	0.96		<2		0.077	<2		0.036	1.21
15:30	<2		0.077	79	0.79		<2		0.077	<2		0.036	1.01
15:33	2	0.08		120	0.98		<2		0.077	<2		0.036	1.21
15:36	<2		0.077	77	0.78		<2		0.077	<2		0.036	1.00
15:39	2	0.09		124	1.00		<2		0.077	<2		0.036	1.23
15:42	<2		0.077	77	0.78		<2		0.077	<2		0.036	1.00
Averages			0.08										1.01

RUN DATA

Number 2

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler

Project Number: 15730.001.008
Operator: VD
Date: 24 Jun 2021

Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
16:30	<2		0.077	0.08	51	0.63	<2		0.077	<2		0.036	0.85
16:33	<2		0.077	0.08	41	0.56	<2		0.077	<2		0.036	0.79
16:36	<2		0.077	0.08	48	0.61	2	0.08		<2		0.036	0.83
16:39	<2		0.077	0.08	58	0.67	<2		0.077	<2		0.036	0.90
16:42	<2		0.077	0.08	68	0.73	<2		0.077	<2		0.036	0.95
16:45	<2		0.077	0.08	89	0.84	<2		0.077	<2		0.036	1.06
16:48	2	0.08		0.08	51	0.63	2	0.08		<2		0.036	0.86
16:51	<2		0.077	0.08	42	0.57	<2		0.077	<2		0.036	0.79
16:54	4	0.11		0.11	44	0.58	<2		0.077	2	0.04		0.84
16:57	3	0.09		0.09	44	0.58	<2		0.077	4	0.05		0.85
17:00	<2		0.077	0.08	52	0.63	3	0.09		3	0.04		0.89
17:03	<2		0.077	0.08	44	0.58	<2		0.077	<2		0.036	0.81
17:06	<2		0.077	0.08	45	0.59	<2		0.077	<2		0.036	0.82
17:09	<2		0.077	0.08	46	0.59	<2		0.077	<2		0.036	0.82
17:12	<2		0.077	0.08	64	0.70	<2		0.077	<2		0.036	0.93
17:15	<2		0.077	0.08	46	0.59	<2		0.077	<2		0.036	0.82
17:18	3	0.10		0.10	54	0.65	<2		0.077	<2		0.036	0.89
17:21	<2		0.077	0.08	61	0.69	<2		0.077	<2		0.036	0.91
17:24	<2		0.077	0.08	52	0.63	<2		0.077	<2		0.036	0.86
17:27	<2		0.077	0.08	53	0.64	<2		0.077	<2		0.036	0.86
Averages				0.08									0.87

RUN DATA

Number 3

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler

Project Number: 15730.001.008
Operator: VD
Date: 24 Jun 2021

Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
18:06	<2		0.077	60	0.68		<2		0.077	<2		0.036	0.91
18:09	<2		0.077	45	0.59		<2		0.077	<2		0.036	0.81
18:12	3	0.09		45	0.59		<2		0.077	<2		0.036	0.83
18:15	3	0.09		49	0.61		<2		0.077	2	0.04		0.86
18:18	<2		0.077	44	0.58		<2		0.077	<2		0.036	0.80
18:21	<2		0.077	49	0.62		<2		0.077	<2		0.036	0.84
18:25	<2		0.077	47	0.60		<2		0.077	<2		0.036	0.83
18:28	3	0.09		61	0.69		2	0.08		<2		0.036	0.93
18:31	<2		0.077	50	0.62		<2		0.077	<2		0.036	0.84
18:34	<2		0.077	50	0.62		<2		0.077	<2		0.036	0.84
18:37	3	0.09		51	0.63		<2		0.077	<2		0.036	0.87
18:40	<2		0.077	88	0.83		<2		0.077	<2		0.036	1.06
18:43	<2		0.077	56	0.66		7	0.15		<2		0.036	0.95
18:46	<2		0.077	53	0.64		<2		0.077	<2		0.036	0.86
18:49	<2		0.077	55	0.65		<2		0.077	3	0.04		0.89
18:52	2	0.08		55	0.65		<2		0.077	<2		0.036	0.88
18:55	3	0.09		51	0.63		<2		0.077	<2		0.036	0.87
18:58	<2		0.077	52	0.63		<2		0.077	<2		0.036	0.86
19:01	<2		0.077	52	0.63		<2		0.077	<2		0.036	0.86
19:04	<2		0.077	52	0.63		<2		0.077	<2		0.036	0.86
Averages													0.87

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
14:45	2	0.08	59	0.68	<2	<0.077	<2	<0.036	0.76
14:48	3	0.10	57	0.66	<2	<0.077	<2	<0.036	0.76
14:51	2	0.08	57	0.66	<2	<0.077	<2	<0.036	0.74
14:54	3	0.09	58	0.67	<2	<0.077	<2	<0.036	0.76
14:57	<2	<0.077	58	0.67	<2	<0.077	<2	<0.036	0.67
15:00	<2	<0.077	55	0.65	<2	<0.077	<2	<0.036	0.65
15:03	<2	<0.077	56	0.66	<2	<0.077	<2	<0.036	0.66
15:06	<2	<0.077	53	0.64	<2	<0.077	2	0.04	0.72
15:09	2	0.09	59	0.67	<2	<0.077	<2	<0.036	0.76
15:12	3	0.09	62	0.69	<2	<0.077	<2	<0.036	0.78
15:15	<2	<0.077	90	0.84	<2	<0.077	<2	<0.036	0.84
15:18	3	0.09	77	0.78	<2	<0.077	<2	<0.036	0.86
15:21	<2	<0.077	90	0.84	<2	<0.077	<2	<0.036	0.84
15:24	<2	<0.077	144	1.08	<2	<0.077	<2	<0.036	1.08
15:27	3	0.10	115	0.96	<2	<0.077	<2	<0.036	1.06
15:30	<2	<0.077	79	0.79	<2	<0.077	<2	<0.036	0.79
15:33	2	0.08	120	0.98	<2	<0.077	<2	<0.036	1.06
15:36	<2	<0.077	77	0.78	<2	<0.077	<2	<0.036	0.78
15:39	2	0.09	124	1.00	<2	<0.077	<2	<0.036	1.08
15:42	<2	<0.077	77	0.78	<2	<0.077	<2	<0.036	0.78
Average		<0.077		0.77		<0.077		<0.036	0.82 ✓

✓

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
16:30	<2	<0.077	51	0.63	<2	<0.077	<2	<0.036	0.63
16:33	<2	<0.077	41	0.56	<2	<0.077	<2	<0.036	0.56
16:36	<2	<0.077	48	0.61	2	0.08	<2	<0.036	0.68
16:39	<2	<0.077	58	0.67	<2	<0.077	<2	<0.036	0.67
16:42	<2	<0.077	68	0.73	<2	<0.077	<2	<0.036	0.73
16:45	<2	<0.077	89	0.84	<2	<0.077	<2	<0.036	0.84
16:48	2	0.08	51	0.63	2	0.08	<2	<0.036	0.79
16:51	<2	<0.077	42	0.57	<2	<0.077	<2	<0.036	0.57
16:54	4	0.11	44	0.58	<2	<0.077	2	0.04	0.77
16:57	3	0.09	44	0.58	<2	<0.077	4	0.05	0.78
17:00	<2	<0.077	52	0.63	3	0.09	3	0.04	0.81
17:03	<2	<0.077	44	0.58	<2	<0.077	<2	<0.036	0.58
17:06	<2	<0.077	45	0.59	<2	<0.077	<2	<0.036	0.59
17:09	<2	<0.077	46	0.59	<2	<0.077	<2	<0.036	0.59
17:12	<2	<0.077	64	0.70	<2	<0.077	<2	<0.036	0.70
17:15	<2	<0.077	46	0.59	<2	<0.077	<2	<0.036	0.59
17:18	3	0.10	54	0.65	<2	<0.077	<2	<0.036	0.75
17:21	<2	<0.077	61	0.69	<2	<0.077	<2	<0.036	0.69
17:24	<2	<0.077	52	0.63	<2	<0.077	<2	<0.036	0.63
17:27	<2	<0.077	53	0.64	<2	<0.077	<2	<0.036	0.64
Average		<0.077		0.63		<0.077		<0.036	0.68 ✓

pu

RUN DATA

Number 3

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
18:06	<2	<0.077	60	0.68	<2	<0.077	<2	<0.036	0.68
18:09	<2	<0.077	45	0.59	<2	<0.077	<2	<0.036	0.59
18:12	3	0.09	45	0.59	<2	<0.077	<2	<0.036	0.68
18:15	3	0.09	49	0.61	<2	<0.077	2	0.04	0.78
18:18	<2	<0.077	44	0.58	<2	<0.077	<2	<0.036	0.58
18:21	<2	<0.077	49	0.62	<2	<0.077	<2	<0.036	0.62
18:25	<2	<0.077	47	0.60	<2	<0.077	<2	<0.036	0.60
18:28	3	0.09	61	0.69	2	0.08	<2	<0.036	0.86
18:31	<2	<0.077	50	0.62	<2	<0.077	<2	<0.036	0.62
18:34	<2	<0.077	50	0.62	<2	<0.077	<2	<0.036	0.62
18:37	3	0.09	51	0.63	<2	<0.077	<2	<0.036	0.72
18:40	<2	<0.077	88	0.83	<2	<0.077	<2	<0.036	0.83
18:43	<2	<0.077	56	0.66	7	0.15	<2	<0.036	0.80
18:46	<2	<0.077	53	0.64	<2	<0.077	<2	<0.036	0.64
18:49	<2	<0.077	55	0.65	<2	<0.077	3	0.04	0.74
18:52	2	0.08	55	0.65	<2	<0.077	<2	<0.036	0.73
18:55	3	0.09	51	0.63	<2	<0.077	<2	<0.036	0.72
18:58	<2	<0.077	52	0.63	<2	<0.077	<2	<0.036	0.63
19:01	<2	<0.077	52	0.63	<2	<0.077	<2	<0.036	0.63
19:04	<2	<0.077	52	0.63	<2	<0.077	<2	<0.036	0.63
Average		<0.077		0.64		<0.077		<0.036	0.69 ✓

✓

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
			CC416806 7.257ppm ✓						
09:05	14217	7.76	<2	<0.12	<2	<0.077	<2	<0.036	7.76
09:08	14648	7.88	<2	<0.12	<2	<0.077	<2	<0.036	7.88
Average		7.82 ✓		<0.12 ✓		<0.077 ✓		<0.036 ✓	7.82 ✓

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Before Run 1

Start Time 12:40 End Time 12:54

Recovery Gas to Probe, Time 12:40

Peak Areas, mv-sec			Average	ppm
12316	12389	12588	12431	7.23

Recovery Gas to GC, Time 12:50

Peak Areas, mv-sec			Average	ppm
15122	15025	15294	15147	8.02

Recovery 90.2% ✓

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

After Run 3 Before Run 4
Start Time 19:07 End Time 19:38

Recovery Gas to Probe, Time 19:07

Peak Areas, mv-sec			Average	ppm
11821	11900	11851	11857 ✓	7.06

Recovery Gas to GC, Time 19:36

Peak Areas, mv-sec			Average	ppm
14397	14822	14833	14684 /	7.89

Recovery 89.5% ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.25 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 37.6 mL/Min	9.34 ppm	9.81 ppm	12.7 ppm	6.42 ppm
Time: 07:00	Peak Areas, mv-sec			
	19790	9921	31382	38948
	20319	10076	31742	38693
	19852	9986	30214	37936
Average Area	19987 ✓	9995 ✓	31113 ✓	38526 ✓

2 Flow = 82.8 mL/Min	4.24 ppm	4.46 ppm	5.77 ppm	2.92 ppm
Time: 11:03	Peak Areas, mv-sec			
	4788	2266	7435	8918
	4588	2209	7188	8687
	4419	2218	7198	8791
Average Area	4598 ✓	2231 ✓	7274 ✓	8798 ✓

3 Flow = 180 mL/Min	1.95 ppm	2.05 ppm	2.66 ppm	1.34 ppm
Time: 11:47	Peak Areas, mv-sec			
	998	492	1607	1968
	985	496	1607	1963
	982	497	1614	1971
Average Area	988 ✓	495 ✓	1609 ✓	1967 ✓

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

H ₂ S	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.34	4.24	1.95		
Area, mv-sec	19987	4598	988		
Calc. Conc., ppm	9.26	4.31	1.94		
% Error	-0.8	1.6	-0.8		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9212	2.4433	0.9998	2	0.077

MeSH	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.81	4.46	2.05		
Area, mv-sec	9995	2231	495		
Calc. Conc., ppm	9.79	4.48	2.05		
% Error	-0.3	0.5	-0.3		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9203	2.0975	>0.9999	2	0.12

DMS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	12.7	5.77	2.66		
Area, mv-sec	31113	7274	1609		
Calc. Conc., ppm	12.6	5.85	2.64		
% Error	-0.7	1.4	-0.7		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8927	2.4098	0.9999	2	0.077

DMDS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	6.42	2.92	1.34		
Area, mv-sec	38526	8798	1967		
Calc. Conc., ppm	6.39	2.94	1.34		
% Error	-0.4	0.8	-0.4		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9009	3.0543	>0.9999	2	0.036

W

CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.55 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	348	365	473	239
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 38.4 mL/Min	9.05 ppm	9.51 ppm	12.3 ppm	6.22 ppm
Time: 06:02	Peak Areas, mv-sec			
	18150	9129	29752	37042
	18234	8899	29635	36567
	17949	9072	29588	35648
Average Area	18111 ✓	9034 ✓	29658 ✓	36419 ✓

2 Flow = 86.9 mL/Min	4.00 ppm	4.20 ppm	5.44 ppm	2.75 ppm
Time: 08:24	Peak Areas, mv-sec			
	4494	1991	6636	8003
	4478	2048	6673	8033
	4420	2010	6502	8101
Average Area	4464 ✓	2016 ✓	6604 ✓	8046 ✓

3 Flow = 191 mL/Min	1.82 ppm	1.92 ppm	2.48 ppm	1.25 ppm
Time: 08:49	Peak Areas, mv-sec			
	1072	443	1449	1837
	1039	453	1513	1835
	1077	449	1476	1874
Average Area	1063 ✓	448 ✓	1479 ✓	1849 ✓

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

H₂S	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	9.05	4.00	1.82			
Area, mv-sec	18111	4464	1063			
Calc. Conc., ppm	8.97	4.07	1.81			
% Error	-0.8	1.7	-0.9			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7702	2.5709	0.9998	2	0.052	
MeSH	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	9.51	4.20	1.92			
Area, mv-sec	9034	2016	448			
Calc. Conc., ppm	9.46	4.25	1.91			
% Error	-0.6	1.1	-0.6			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8751	2.1261	0.9999	2	0.11	
DMS	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	12.3	5.44	2.48			
Area, mv-sec	29658	6604	1479			
Calc. Conc., ppm	12.2	5.49	2.47			
% Error	-0.5	1.0	-0.5			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8718	2.4355	0.9999	2	0.072	
DMDS	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	6.22	2.75	1.25			
Area, mv-sec	36419	8046	1849			
Calc. Conc., ppm	6.21	2.76	1.25			
% Error	-0.2	0.4	-0.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8610	3.0854	>0.9999	2	0.032	

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ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483 ✓	716 ✓	1197 ✓	918 ✓
Permeation Rate, nL/min*	348	365	473	239

Barometric Pressure: 29.55 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.55) \\ = 348 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

File: C:\Data\210624 New Indy Catawba No. 2 CB.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061
Detector Range: 10

Gases		Temperatures, °C	Columns
Press.	Flow		
psi	mL/min		
H ₂	30	50	Primary: Carbopack
Air	30	60	Secondary: N/A
Carrier	50	30	Sample Loop: 4"

Injection Cycle

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.55 in. Hg

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
-----------------------	-------------------------------	--------------------------------	----------------------------------

Time: 14:45 to 15:45

Run Averages

13.0 6.6 320

Pre-run Bias at 14:36

Zero Bias	0.1	0.0	4
Span Bias	10.1	10.2	242
Span Gas	10.1	10.2	242

Post-run Bias at 15:50

Zero Bias	0.0	0.0	4
Span Bias	10.1	10.2	239
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

13.1 ✓ 6.6 ✓ 324 ✓

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RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
-----------------------	-------------------------------	--------------------------------	----------------------------------

Time: 16:30 to 17:30

Run Averages

12.6	6.9	324
------	-----	-----

Pre-run Bias at 15:50

Zero Bias	0.0	0.0	4
Span Bias	10.1	10.2	239
Span Gas	10.1	10.2	242

Post-run Bias at 17:33

Zero Bias	0.1	0.0	7
Span Bias	10.1	10.1	244
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.7 ✓	6.9 ✓	327 ✓
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RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
-----------------------	-------------------------------	--------------------------------	----------------------------------

Time: 18:06 to 19:06

Run Averages

12.2	7.3	321
------	-----	-----

Pre-run Bias at 17:33

Zero Bias	0.1	0.0	7
Span Bias	10.1	10.1	244
Span Gas	10.1	10.2	242

Post-run Bias at 19:08

Zero Bias	0.1	0.0	5
Span Bias	10.1	10.2	241
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.3 ✓	7.3 ✓	322 ✓
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✓

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂ mv	%	CO ₂ mv	%	SO ₂ mv	ppm
------	----------------------	---	-----------------------	---	-----------------------	-----

With NCGs & SOGs

Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter

Point 1

14:46	4108	12.4	2996	7.5	3011	300
14:47	4097	12.3	2991	7.4	3017	300
14:48	3977	12.0	3028	7.5	3055	304
14:49	3987	12.0	3156	7.9	3085	307
14:50	3979	12.0	3132	7.8	3072	306
14:51	3980	12.0	3149	7.8	2913	290
14:52	4083	12.3	3137	7.8	2875	286
14:53	4206	12.7	3007	7.5	2930	292
14:54	4236	12.8	2877	7.2	3006	299
14:55	4218	12.7	2850	7.1	3073	306
14:56	4370	13.2	2810	7.0	3033	302
14:57	4368	13.1	2667	6.6	3136	312
14:58	4294	12.9	2672	6.6	3154	314
14:59	4319	13.0	2752	6.8	3132	312
15:00	4296	12.9	2731	6.8	3223	321
15:01	4316	13.0	2753	6.8	3181	317
15:02	4381	13.2	2710	6.7	3211	320
15:03	4185	12.6	2684	6.7	3173	316
15:04	4069	12.3	2877	7.2	2984	297
15:05	4041	12.2	3001	7.5	3041	303

Point 2

15:06	4040	12.2	3033	7.5	3076	306
15:07	4140	12.5	2999	7.5	3038	303
15:08	4235	12.7	2901	7.2	3046	303
15:09	4259	12.8	2783	6.9	3069	306
15:10	4355	13.1	2749	6.8	3154	314
15:11	4384	13.2	2653	6.6	3311	330
15:12	4466	13.4	2604	6.5	3337	332
15:13	4555	13.7	2489	6.2	3276	326
15:14	4534	13.6	2410	6.0	3205	319
15:15	4491	13.5	2421	6.0	3145	313
15:16	4454	13.4	2451	6.1	3196	318
15:17	4454	13.4	2500	6.2	3166	315
15:18	4342	13.1	2515	6.2	3281	327
15:19	4342	13.1	2624	6.5	3244	323
15:20	4463	13.4	2612	6.5	3261	325
15:21	4483	13.5	2474	6.1	3373	336
15:22	4487	13.5	2458	6.1	3366	335

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
15:23	4539	13.7	2438	6.1	3201	319
15:24	4574	13.8	2381	5.9	3191	318
15:25	4521	13.6	2354	5.8	3329	332
Point 3						
15:26	4507	13.6	2413	6.0	3346	333
15:27	4454	13.4	2435	6.0	3376	336
15:28	4416	13.3	2485	6.2	3524	351
15:29	4404	13.3	2539	6.3	3496	348
15:30	4461	13.4	2540	6.3	3423	341
15:31	4560	13.7	2475	6.1	3252	324
15:32	4510	13.6	2370	5.9	3272	326
15:33	4479	13.5	2425	6.0	3328	332
15:34	4431	13.3	2459	6.1	3328	332
15:35	4429	13.3	2519	6.3	3325	331
15:36	4361	13.1	2540	6.3	3347	333
15:37	4435	13.3	2573	6.4	3340	333
15:38	4422	13.3	2527	6.3	3372	336
15:39	4476	13.5	2509	6.2	3481	347
15:40	4464	13.4	2455	6.1	3535	352
15:41	4395	13.2	2494	6.2	3451	344
15:42	4358	13.1	2563	6.4	3253	324
15:43	4318	13.0	2598	6.5	3260	325
15:44	4310	13.0	2647	6.6	3270	326
15:45	4298	12.9	2666	6.6	3261	325
Avg	4335	13.0	2668	6.6	3214	320

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs & SOGs						
Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter						
Point 1						
16:31	4171	12.6	2672	6.6	3216	320
16:32	4119	12.4	2788	6.9	3200	319
16:33	4126	12.4	2856	7.1	3255	324
16:34	4203	12.7	2842	7.1	3239	323
16:35	4294	12.9	2741	6.8	3356	334
16:36	4374	13.2	2640	6.6	3431	342
16:37	4326	13.0	2566	6.4	3322	331
16:38	4338	13.1	2604	6.5	3146	313
16:39	4312	13.0	2606	6.5	3257	324
16:40	4358	13.1	2614	6.5	3196	318
16:41	4456	13.4	2562	6.4	3256	324
16:42	4497	13.5	2454	6.1	3263	325
16:43	4433	13.3	2410	6.0	3234	322
16:44	4408	13.3	2484	6.2	3253	324
16:45	4381	13.2	2513	6.2	3261	325
16:46	4286	12.9	2558	6.4	3171	316
16:47	4296	12.9	2654	6.6	3252	324
16:48	4265	12.8	2651	6.6	3433	342
16:49	4108	12.4	2702	6.7	3304	329
16:50	4012	12.1	2875	7.2	3162	315
Point 2						
16:51	4020	12.1	2971	7.4	3150	314
16:52	4040	12.2	2975	7.4	3140	313
16:53	4117	12.4	2932	7.3	3064	305
16:54	4169	12.6	2860	7.1	3134	312
16:55	4080	12.3	2812	7.0	3235	322
16:56	4024	12.1	2918	7.3	3268	326
16:57	4039	12.2	2965	7.4	3366	335
16:58	4118	12.4	2933	7.3	3460	345
16:59	4178	12.6	2843	7.1	3359	335
17:00	4081	12.3	2796	7.0	3239	323
17:01	4041	12.2	2911	7.2	3179	317
17:02	4127	12.4	2921	7.3	3164	315
17:03	4118	12.4	2865	7.1	3219	321
17:04	4162	12.5	2847	7.1	3337	332
17:05	4157	12.5	2814	7.0	3355	334
17:06	4228	12.7	2798	7.0	3420	341
17:07	4265	12.8	2722	6.8	3258	325

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
17:08	4049	12.2	2716	6.8	3091	308
17:09	3988	12.0	2952	7.3	3184	317
17:10	4218	12.7	2989	7.4	3145	313
Point 3						
17:11	4304	13.0	2738	6.8	3235	322
17:12	4144	12.5	2669	6.6	3288	328
17:13	4077	12.3	2848	7.1	3181	317
17:14	4102	12.3	2902	7.2	3201	319
17:15	4152	12.5	2887	7.2	3242	323
17:16	4200	12.6	2827	7.0	3326	331
17:17	4233	12.7	2760	6.9	3407	339
17:18	4267	12.8	2729	6.8	3435	342
17:19	4334	13.0	2703	6.7	3244	323
17:20	4262	12.8	2622	6.5	3225	321
17:21	4237	12.8	2700	6.7	3205	319
17:22	4242	12.8	2722	6.8	3095	308
17:23	4205	12.7	2711	6.7	3211	320
17:24	4237	12.8	2762	6.9	3277	326
17:25	4220	12.7	2727	6.8	3322	331
17:26	4226	12.7	2731	6.8	3456	344
17:27	4112	12.4	2751	6.8	3471	346
17:28	3963	11.9	2895	7.2	3258	325
17:29	4087	12.3	3036	7.6	3187	317
17:30	4290	12.9	2875	7.2	3147	313
Avg	4198	12.6	2765	6.9	3256	324

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs & SOGs						
Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter						
Point 1						
18:07	4211	12.7	2670	6.6	3226	321
18:08	4167	12.5	2744	6.8	3287	327
18:09	4135	12.4	2791	6.9	3381	337
18:10	4078	12.3	2850	7.1	3388	337
18:11	4130	12.4	2872	7.1	3358	334
18:12	4218	12.7	2826	7.0	3176	316
18:13	4226	12.7	2731	6.8	3113	310
18:14	4187	12.6	2729	6.8	3126	311
18:15	4179	12.6	2764	6.9	3202	319
18:16	4163	12.5	2782	6.9	3191	318
18:17	4074	12.3	2813	7.0	3218	321
18:18	4040	12.2	2921	7.3	3165	315
18:19	4079	12.3	2945	7.3	3147	313
18:20	4099	12.3	2894	7.2	3166	315
18:21	4158	12.5	2880	7.2	3209	320
18:22	3944	11.9	2856	7.1	3328	332
18:23	3929	11.8	3056	7.6	3281	327
18:24	3911	11.8	3091	7.7	3245	323
18:25	4003	12.1	3120	7.8	3123	311
18:26	4117	12.4	2988	7.4	3047	303
Point 2						
18:27	4242	12.8	2825	7.0	3183	317
18:28	4129	12.4	2734	6.8	3203	319
18:29	4041	12.2	2845	7.1	3200	319
18:30	4020	12.1	2964	7.4	3329	332
18:31	3939	11.9	2995	7.5	3416	340
18:32	3931	11.8	3074	7.7	3363	335
18:33	3942	11.9	3072	7.6	3140	313
18:34	3967	11.9	3065	7.6	3141	313
18:35	3990	12.0	3043	7.6	3144	313
18:36	4051	12.2	2988	7.4	3136	312
18:37	4050	12.2	2952	7.3	3166	315
18:38	4177	12.6	2911	7.2	3147	313
18:39	4294	12.9	2765	6.9	3269	326
18:40	4135	12.4	2684	6.7	3425	341
18:41	4071	12.3	2854	7.1	3408	339
18:42	4087	12.3	2908	7.2	3243	323
18:43	3982	12.0	2920	7.3	3143	313

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
18:44	3985	12.0	3017	7.5	3084	307
18:45	3917	11.8	3024	7.5	3169	316
18:46	3920	11.8	3099	7.7	3200	319
Point 3						
18:47	4006	12.1	3072	7.6	3196	318
18:48	4096	12.3	2981	7.4	3334	332
18:49	4079	12.3	2899	7.2	3367	335
18:50	4091	12.3	2902	7.2	3216	320
18:51	4122	12.4	2900	7.2	3076	306
18:52	4122	12.4	2859	7.1	3144	313
18:53	4039	12.2	2873	7.1	3157	314
18:54	4078	12.3	2937	7.3	3167	315
18:55	3970	12.0	2928	7.3	3206	319
18:56	3924	11.8	3051	7.6	3177	316
18:57	4012	12.1	3077	7.7	3221	321
18:58	3967	11.9	2999	7.5	3408	339
18:59	3991	12.0	3032	7.5	3252	324
19:00	4119	12.4	2983	7.4	3119	311
19:01	4028	12.1	2885	7.2	3113	310
19:02	4042	12.2	2965	7.4	3084	307
19:03	3997	12.0	2966	7.4	3159	315
19:04	3963	11.9	3000	7.5	3214	320
19:05	3951	11.9	3036	7.6	3345	333
19:06	3958	11.9	3065	7.6	3360	335
Avg	4058	12.2	2925	7.3	3220	321

BIAS

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 09:56

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	22	0.1	0.1	0.5 ✓	Pass
Span	10.1	3355	10.1	0.0	0.0 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	35	0.0	0.1	0.5 ✓	Pass
Span	10.3	4075	10.2	-0.1	-0.5 ✓	Pass

SO₂

Method: EPA 6C
Span Conc. 458 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-1	2	0	1	0.2 ✓	Pass
Span	244	2376	237	-7	-1.5 ✓	Pass

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 14:36

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	37	0.1	0.1	0.5 ✓	Pass
Span	10.1	3339	10.1	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.1	37	0.1	0.0	0.0 ✓	Pass
Span	10.1	3339	10.1	0.0	0.0 ✓	Pass

*Bias No. 1

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	21	0.0	0.1	0.5 ✓	Pass
Span	10.3	4072	10.2	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	21	0.0	0.0	0.0 ✓	Pass
Span	10.2	4072	10.2	0.0	0.0 ✓	Pass

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 14:36

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-1	43	4	5	1.1	Pass
Span	244	2432	242	-2	-0.4	Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	43	4	4	0.9	Pass
Span	237	2432	242	5	1.1	Pass

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 15:50

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	3	0.0	0.0	0.0 ✓	Pass
Span	10.1	3340	10.1	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.1	3	0.0	-0.1	-0.5 ✓	Pass
Span	10.1	3340	10.1	0.0	0.0 ✓	Pass

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	6	0.0	0.1	0.5 ✓	Pass
Span	10.3	4078	10.2	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.2	4078	10.2	0.0	0.0 ✓	Pass

*Bias No. 2

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 15:50

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-1	48	4	5	1.1	✓ Pass
Span	244	2402	239	-5	-1.1	✓ Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	4	48	4	0	0.0	✓ Pass
Span	242	2402	239	-3	-0.7	✓ Pass

*Bias No. 2

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BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 17:33

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	16	0.1	0.1	0.5 ✓	Pass
Span	10.1	3338	10.1	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	16	0.1	0.1	0.5 ✓	Pass
Span	10.1	3338	10.1	0.0	0.0 ✓	Pass

*Bias No. 3

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	6	0.0	0.1	0.5 ✓	Pass
Span	10.3	4045	10.1	-0.2	-1.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.2	4045	10.1	-0.1	-0.5 ✓	Pass

*Bias No. 3

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 17:33

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-1	77	7	8	1.7	✓ Pass
Span	244	2447	244	0	0.0	✓ Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	4	77	7	3	0.7	✓ Pass
Span	239	2447	244	5	1.1	✓ Pass

*Bias No. 3

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 19:08

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	16	0.1	0.1	0.5 ✓	Pass
Span	10.1	3349	10.1	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.1	16	0.1	0.0	0.0 ✓	Pass
Span	10.1	3349	10.1	0.0	0.0	Pass

*Bias No. 4

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	6	0.0	0.1	0.5 ✓	Pass
Span	10.3	4104	10.2	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0 ✓	Pass
Span	10.1	4104	10.2	0.1	0.5 ✓	Pass

*Bias No. 4

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BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 19:08

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-1	50	5	6	1.3 ✓	Pass
Span	244	2418	241	-3	-0.7 ✓	Pass

Calibration Drift						
Standard	Initial*		Final	Difference	Drift	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	7	50	5	-2	-0.4 ✓	Pass
Span	244	2418	241	-3	-0.7 ✓	Pass

*Bias No. 4

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CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 09:44

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-2
10.1 ✓	XC013544B	3348
20.2 ✓	CC275468	6739

Curve Coefficients

Slope	Intercept	Corr. Coeff.
333.1 ✓	-11 ✓	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	4
10.2 ✓	XC013544B	4116
20.3 ✓	CC275468	8080

Curve Coefficients

Slope	Intercept	Corr. Coeff.
398.4 ✓	25 ✓	>0.9999 ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 09:44

SO₂

Method: EPA 6C

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero	-	-5
242 ✓	CC234516	2450
458 ✓	EB0108003	4587

Curve Coefficients

Slope	Intercept	Corr. Coeff.
10.03 ✓	3 ✓	>0.9999 ✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Start Time: 09:44

O₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 333.1 Intercept -11.0

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-2	0.0	0.0	0.0 ✓	Pass
10.1	3348	10.1	0.0	0.0 ✓	Pass
20.2	6739	20.3	0.1	0.5 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Slope 398.4 Intercept 25.3

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	4	-0.1	-0.1	-0.5 ✓	Pass
10.2	4116	10.3	0.1	0.5 ✓	Pass
20.3	8080	20.2	-0.1	-0.5 ✓	Pass

SO₂

Method: EPA 6C
Span Conc. 458 ppm

Slope 10.03 Intercept 3

Standard ppm	Response mv	Result ppm	Difference ppm	Error %	Status
Zero	-5	-1	-1	-0.2 ✓	Pass
242	2450	244	2	0.4 ✓	Pass
458	4587	457	-1	-0.2 ✓	Pass

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

File: C:\Data\210624 New Indy Catawba No. 2 CB.cem
Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04
Computer: WSAUBCHEMLABGC1 **Trailer:** 281
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.3

Channel 5

Analyte	SO₂
Method	EPA 6C, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T100H SN 374
Full-Scale Output, mv	10000
Analyzer Range, ppm	500
Span Concentration, ppm	458



APPENDIX F

No. 2 COMBINATION BOILER (CONDITION 2: NCG GASES ONLY)

New Indy
Catawba, SC

15730.001.008
No. 2 Combination Boiler
Condition 2: NCGs Only

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21 ✓	6/25/21 ✓	6/25/21 ✓	---
Time Began	1000 ✓	1135 ✓	1315 ✓	---
Time Ended	1100 ✓	1235 ✓	1415 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	1.56E+05 ✓	1.55E+05 ✓	1.56E+05 ✓	1.56E+05
BWS	0.139 ✓	0.142 ✓	0.139 ✓	0.140
% Oxygen	12.8 ✓	12.7 ✓	12.3 ✓	12.6
Recovery, %	93.5 ✓	93.5 ✓	93.5 ✓	93.5
<hr/>				
Sulfur Dioxide				
MW= 64.06				
Concentration, ppm	247.0 ✓	245.0 ✓	235.0 ✓	242.3
Emission Rate, lb/hr	383.2	380.0	366.2	376.4
<hr/>				
Total Reduced Sulfur				
(TRS MW)= 34.08				
Concentration, ppm	1.22 ✓	1.18 ✓	0.94 ✓	1.11
Emission Rate, lb/hr	1.01	0.97	0.78	0.92
<hr/>				
H2S				
(H2S MW)= 34.08				
Concentration, ppm	0.05 ✓	0.05 ✓	0.05 ✓	0.05
Concentration, ppm (Corrected for Recovery)	0.05	0.05	0.05	0.05
Emission Rate, lb/hr	0.04	0.04	0.04	0.04

New Indy
Catawba, SC

15730.001.008
No. 2 Combination Boiler

Condition 2: NCGs Only

ISOKINETIC CALCULATIONS

Run Number	1	2	3	Mean
Date	6/25/21 ✓	6/25/21 ✓	6/25/21 ✓	---
Time Began	1000 ✓	1135 ✓	1315 ✓	---
Time Ended	1124 ✓	1259 ✓	1441 ✓	---

INPUT DATA

Sampling Time, min	(Theta)	64.0 ✓	64 ✓	64 ✓	64
Stack Diameter, in.	(Dia.)	120.00 ✓	120.00 ✓	120.00 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.60 ✓	29.60 ✓	29.60 ✓	29.60
Static Pressure, in. H2O	(Pg)	-0.64 ✓	-0.64 ✓	-0.64 ✓	-0.64
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	0.9880 ✓	0.9880 ✓	0.9880 ✓	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 ✓	1.7320 ✓	1.7320 ✓	1.7320
Nozzle Diameter, in.	(Dn)	0.250 ✓	0.250 ✓	0.250 ✓	0.250
Meter Volume, ft ³	(Vm)	42.272 ✓	42.147 ✓	42.353 ✓	42.257
Meter Temperature, °F	(Tm)	85.8 ✓	93.1 ✓	95.3 ✓	91.4
Meter Temperature, °R	(Tm-R)	545.8	553.1	555.3	551.4
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 ✓	1.300 ✓	1.300 ✓	1.300
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.140 ✓	1.140 ✓	1.140 ✓	1.140
Volume H2O Collected, mL	(Vlc)	137.1 ✓	138.6 ✓	135.0 ✓	136.9
CO2 Concentration, %	(CO2)	6.9 ✓	6.8 ✓	7.3 ✓	7.0
O2 Concentration, %	(O2)	12.8 ✓	12.7 ✓	12.3 ✓	12.6
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	0.897 ✓	0.901 ✓	0.908 ✓	0.902
Stack Temperature, °F	(Ts)	468.3 ✓	470.3 ✓	480.9 ✓	473.2
Stack Temperature, °R	(Ts-R)	928.3	930.3	940.9	933.2

CALCULATED DATA

Nozzle Area, ft ²	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft ²	(As)	78.54 ✓	78.54 ✓	78.54 ✓	78.54
Stack Pressure, in. Hg	(Ps)	29.55	29.55	29.55	29.55
Meter Pressure, in. Hg	(Pm)	29.70	29.70	29.70	29.70
Standard Meter Volume, ft ³	(Vmstd)	40.087	39.435	39.477	39.667
Standard Water Volume, ft ³	(Vwstd)	6.453	6.524	6.354	6.444
Moisture Fraction (Measured)	(BWS)	0.139	0.142	0.139	0.140
Moisture Fraction (lower sat/meas)	(BWS)	0.139	0.142	0.139	0.140
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.62	29.60	29.66	29.62
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	28.01	27.95	28.04	28.00
Average Stack Gas Velocity, ft/sec	(Vs)	68.24	68.63	69.48	68.78
Stack Gas Flow, actual, ft ³ /min	(Qa)	321588	323402	327406	324132
Stack Gas Flow, Std, ft ³ /min	(Qs)	155554	155499	156245	155766

Calibration check	(Yqa)	0.9937	1.0037	0.9996	0.999
Percent difference from Y					1.11%

✓

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Combination Boiler
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 1
 Date 6/25/21
 Test Personnel ATL/LL
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y .998
 Console ΔH@ 1.732
 Probe ID/Length PR 5B 5'
 Liner Material SS
 Pitot ID/Coeff. P172 0.84
 Thermo ID A010
 Nozzle ID/Diams. .250
 Avg. Nozzle Diam. .250 in.

Ambient Temp. 80 °F
 Baro. Pressure* 24.60 in. Hg
 Static Pressure -0.64 in. H₂O
 Impinger Gain 128.06 mL
 Silica Gel Gain 137.1 g
 Stack Area 8.54 ft²
 Total Traverse Points 16

K Factor 1.4

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	.002	.000
Pitot	8	5

Filter ID NA

Sample ID Run 1 NL606

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
#1 C	0	10:00			223.860									
2	84		.88	1.3	226.4	466		79	245	247		65	2.5	
3	88		.85	1.3	229.2	468		79	244	250		63	2.5	
4	112		.85	1.3	231.7	467		80	243	252		60	2.5	
#1 D	116	10:16	.77	1.3	234.3	468		81	246	253		58	2.5	
2	120	10:22	.90	1.3	237.0	466		84	245	254		59	2.5	
3	124		.87	1.3	239.5	466		84	246	255		58	2.5	
4	2128		.85	1.3	242.2	467		85	245	256		55	2.5	
#1 A	232	10:38	.80	1.3	244.8	471		87	244	256		54	2.5	
2	236	10:42	.80	1.3	247.4	470		89	243	255		60	2.5	
3	3046		.77	1.3	250.3	470		84	243	254		55	2.5	
4	3044		.90	1.3	252.5	469		88	244	255		56	2.5	
#1 B	3648	10:58	.72	1.3	255.5	469		88	245	256		57	2.5	
2	3952	11:06	.82	1.3	258.0	469		89	246	255		63	3	
3	4256		.80	1.3	260.8	469		90	245	253		59	3	
4	4560		.72	1.3	263.3	469		90	246	254		55	3	
	4864	11:24	.70	1.3	266.0	470		90	245	255		56	3	
*Barometric Pressure is at port elevation			Avg V _{sp} 1.8473	Avg ΔH 1.3	Total Volume 42.272	Avg T _g 468.31	Avg T _i 85.75	Avg T _o 85.75	Min/Max 243/246	Min/Max 247/256	Min/Max	Max Temp 65	Max Vac 3	V _m -std, SCF



Integrated Air Services

Flue Gas Composition
 Oxygen, %
 Carbon Dioxide, %
 Moisture, %

O₂/CO₂ by Orsat Fyrite M3A
 Leak Check, Pre-run
 Post-run

Thermocouple Check
 Meter Temp., °F
 % Isokinetic
 Calculated by
 Result

Comments NL606

15730.001.008
 Pulv. Dryer, #1 Paper Machine,
 #2-3 Sulfuric & #1-2 CBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Indy
 Location/Plant Catawba, SC
 Source No. 2 Combination Boiler
 Sample Location Stack outlet
 W. O. Number 15730.001.008
 Run Number 2
 Date 6/25/21
 Test Personnel ATL
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y 1.988
 Console ΔH@ 1.732
 Probe ID/Length PR53
 Liner Material SS
 Pitot ID/Coeff. 0.84
 Thermo ID A010
 Nozzle ID/Diams. 230
 Avg. Nozzle Diam. 230 in.

Ambient Temp. 85 °F
 Baro. Pressure* 29.60 in. Hg
 Static Pressure -64 in. H₂O
 Impinger Gain 126.9 mL
 Silica Gel Gain 11.7 g
 Stack Area 78.54 ft²
 Total Traverse Points 16

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	1.000	1.000
Pitot	8	5
	1.000	1.000

Filter ID NA
 Sample ID Run 2 NC606by

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Δp (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in. Hg)	COMMENTS
A-1 C	0	11:35			266.300	467								
2	84		.87	1.3	264.0	467		90	242	230		66	3.25	
3	88		.89	1.3	271.5	470		90	244	244		64	2.5	
4	912		.85	1.3	274.2	471		91	245	233		54	2.5	
4	1216	11:51	.75	1.3	276.7	470		91	246	234		57	2.5	
4-1 D	1810	11:57	.92	1.3	274.4	468		92	247	236		64	2.5	
2	1824		.90	1.3	282.0	464		92	248	235		60	2.5	
3	2124		.85	1.3	285.6	464		93	247	236		54	2.5	
4	2432	11:13	.83	1.3	287.5	468		93	248	235		60	2.5	
4-1 A	2736	11:18	.85	1.3	246.6	467		94	249	236		65	2.5	
2	3040		.80	1.3	243.5	470		95	250	236		63	2.5	
3	3244		.80	1.3	245.4	471		94	231	236		61	3	
4	3648	11:34	.65	1.3	247.8	468		94	232	235		61	3	
4-1 B	3852	11:43	.86	1.3	300.6	464		95	244	247		65	3	
2	4256		.85	1.3	303.1	475		95	245	249		65	3	
3	4560		.69	1.3	305.4	477		95	261	250		64	3.5	
4	4864	11:54	.65	1.3	308.447	478		96	245	250		64	3.5	
*Barometric Pressure is at port elevation														
			Avg Δp	Avg ΔH	Total Volume	Avg T _s	Avg T _m			Min/Max	Min/Max	Max Temp	Max Vac	scf m-std.
			.9005	1.3	42.147	470.31	94.3.123			247/256	247/256	65.66	3.5	✓
			.8131	1.140										



Integrated Air Services

Flue Gas Composition
 Oxygen, %
 Carbon Dioxide, %
 Moisture, %

Leak Check, Pre-run
 Post-run

O₂/CO₂ by Orsat Fyrite M3A

Thermocouple Check
 Meter Temp., °F
 Ref. Temp., °F
 Result

Q_s, dscfm
 % Isokinetic
 Calculated by
 QC by

15730.001.008
 Pulp Dryer, # Paper Machine,
 #2-3 BDTVs, & #1-2 CBs
 Emission Report

Isokinetic Field Data

Method: EPA 4, Moisture

Page 1 of 1

Client New Ind
 Location/Plant Catawba, SC
 Source No. 2 Combination Boiler
 Sample Location stackdown
 W. O. Number 15730.001.008
 Run Number 3
 Date 6/23/21
 Test Personnel AR/LL
 Sample Time 64 min.

Console ID A010
 Meter Corr., Y .988
 Console ΔH@ 1.732
 Probe ID/Length PR53 5'
 Liner Material SS
 Pitot ID/Coeff. PI72 0.84
 Thermo ID A010
 Nozzle ID/Diams. .250
 Avg. Nozzle Diam. .256 in.

Ambient Temp. 45 °F
 Baro. Pressure* 29.60 in. Hg
 Static Pressure -64 in. H₂O
 Impinger Gain 126.4 mL
 Silica Gel Gain 11.7 g

K Factor NA

Leak Checks

Volume, ft ³	Initial	Final
@ Vac., in. Hg	<u>.603</u>	<u>.051</u>
Pitot	<u>8</u>	<u>5</u>

Filter ID NA
 Sample ID Run3 NCG only

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE ΔP (in. H ₂ O)	ORIFICE PRESSURE ΔH (in. H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	FILTER EXIT TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VACUUM (in Hg)	COMMENTS
1	0	13:15			308.700									
2	84		.94	1.3	311.4	481		96	250	250		65	3	
3	88		.90	1.3	313.7	486		96	252	251		61	3	
4	112		.86	1.3	316.8	485		96	253	250		58	3	
5	1216	13:31	.77	1.3	319.3	485		97	252	253		57	3.5	
6	1620	13:37	.95	1.3	322.4	484		96	253	250		55	3.5	
7	1824		.90	1.3	324.6	484		96	252	250		55	3.5	
8	2128		.85	1.3	327.1	484		96	253	251		56	3.5	
9	2432	13:53	.83	1.3	329.8	482		95	254	250		56	3.5	
10	2736	13:58	.85	1.3	332.4	479		96	253	251		63	3.5	
11	3040	14:03	.75	1.3	335.7	479		96	254	250		58	3.5	
12	3344	14:14	.75	1.3	337.5	478		96	255	244		58	3.5	
13	3648	13:14	.72	1.3	340.7	478		95	254	248		59	3.5	
14	3952	13:25	.85	1.3	343.6	475		93	255	247		65	3.5	
15	4256	14:25	.83	1.3	345.8	476		93	256	246		63	3.5	
16	4560	14:41	.75	1.3	348.4	480		93	257	248		63	3.5	
17	4864	14:44	.70	1.3	351.053	479		94	256	249		64	3.5	
*Barometric Pressure is at port elevation Avg VAP <u>.9080</u> Avg ΔH <u>1.3</u> Total Volume <u>42.353</u> Avg T _s <u>480.4</u> Avg T _o <u>45.25</u> Min/Max <u>250/251</u> Min/Max <u>247/253</u>														

Thermocouple Check
 Meter Temp., °F _____
 Ref. Temp., °F _____
 Result _____

O₂/CO₂ by Orsat Fyrite MSA
 Leak Check, Pre-run _____
 Post-run _____

Flue Gas Composition
 Oxygen, % _____
 Carbon Dioxide, % _____
 Moisture, % _____

Comments NCG only



Integrated Air Services

15730.001.008
 Pump Dryer, Paper Machine,
 #2-3 S... & #1-2 CBs
 Production Report

Sample Recovery Field Data

Method: EPA 4, Moisture

Client New Indy
Location/Plant Catawba, SC

Source No. 2 Combination Boiler
W.O. Number 15730.001.008

Impingers 1 - 3 measurements in grams

Run No. 1 Sample Date 6/25/21 Recovery Date 6/25/21
Sample ID Run 1 NLG only Filter ID NA Analyst ATK

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	779.7	746.5	660.3		905.3	
Initial	670	780.9	657	✓	896.8	✓
Gain	109.7 ✓	15.6 ✓	3.3 ✓	128.6	8.5 ✓	137.1

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Run No. 2 Sample Date 6/25/21 Recovery Date 6/25/21
Sample ID Run 2 NLG only Filter ID NA Analyst ATK

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	820.9	818.9	634.7		850.7	
Initial	718.5	797.1	632.0	✓	839.0	
Gain	102.4 ✓	21.8 ✓	2.7 ✓	126.9	11.7	138.6

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

Run No. 3 Sample Date 6/25/21 Recovery Date 6/25/21
Sample ID Run 3 NLG only Filter ID ATK Analyst ATK

	Impingers			Imp.Total	Silica Gel grams	Total
	1	2	3			
Contents	DI	DI	empty			
Final	744.7	742.1	645.5		939.4	
Initial	639.4	724.7	643.0	✓	929.6	
Gain	105.3 ✓	17.4 ✓	2.5 ✓	125.2	9.6	134.8

Impinger Color clear Labeled? ✓
Silica Gel Condition used Sealed? ✓

9.8 ✓ 135 ✓
ATK
7/1

Check COC for Sample IDs of Media Blanks

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 10:00 End Time 11:00

Average Measured TRS Conc.

Recovery No. 2

TRS Corrected for Recovery

~~1.06~~ 1.14

0.98 ppm

93.5 %

1.04 ppm

4.3
1.22

AB
915 ✓

AB
912a ✓

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 11:35 End Time 12:35

Average Measured TRS Conc.

~~1.07~~ 1.10
0.92 ppm

Recovery No. 2

93.5 %

TRS Corrected for Recovery

0.99 ppm

AB
9/29

~~1.08~~
1.18

AB
9/15 ✓

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time 13:15 End Time 14:15

Average Measured TRS Conc.

~~0.80~~ 0.89
0.71 ppm

Recovery No. 2

93.5 %

TRS Corrected for Recovery

~~0.76~~
0.94 ppm

AB
9129 ✓

AB
915 ✓

RUN DATA

Number 1

Client: New Indy
 Location: Catawba, NC
 Source: #2 Combination Boiler

Project Number: 15730.001.008
 Operator: VD
 Date: 25 Jun 2021

Method: 16
 Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
10:00	<2		0.052	81	0.76		2	0.08		<2		0.032	0.96
10:03	2	0.06		84	0.78		<2		0.072	<2		0.032	0.97
10:06	2	0.06		93	0.82		<2		0.072	<2		0.032	1.02
10:09	2	0.05		132	0.99		<2		0.072	2	0.03		1.18
10:12	<2		0.052	123	0.96		<2		0.072	<2		0.032	1.14
10:15	<2		0.052	219	1.30		<2		0.072	<2		0.032	1.49
10:18	<2		0.052	106	0.89		<2		0.072	<2		0.032	1.07
10:21	<2		0.052	126	0.97		<2		0.072	<2		0.032	1.16
10:24	<2		0.052	111	0.91		<2		0.072	<2		0.032	1.10
10:27	<2		0.052	108	0.89		<2		0.072	<2		0.032	1.08
10:30	<2		0.052	105	0.88		<2		0.072	<2		0.032	1.07
07:40	<2		0.052	99	0.85		<2		0.072	<2		0.032	1.04
10:36	<2		0.052	102	0.86		<2		0.072	4	0.05		1.09
10:39	<2		0.052	106	0.88		<2		0.072	<2		0.032	1.07
10:42	3	0.07		106	0.88		<2		0.072	<2		0.032	1.09
10:45	<2		0.052	132	0.99		<2		0.072	<2		0.032	1.18
10:48	<2		0.052	149	1.06		<2		0.072	<2		0.032	1.25
10:51	<2		0.052	133	1.00		<2		0.072	<2		0.032	1.18
10:54	3	0.07		135	1.01		<2		0.072	<2		0.032	1.21
10:57	<2		0.052	171	1.14		9	0.16		<2		0.032	1.41
Averages													1.14

RUN DATA

Number 2

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler

Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021

Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
11:35	<2		0.052	93	0.82		4	0.11		<2		0.032	1.05
11:38	<2		0.052	104	0.87		<2		0.072	<2		0.032	1.06
11:41	<2		0.052	98	0.85		<2		0.072	<2		0.032	1.04
11:44	<2		0.052	85	0.78		<2		0.072	<2		0.032	0.97
11:47	<2		0.052	147	1.05		<2		0.072	<2		0.032	1.24
11:50	<2		0.052	201	1.24		<2		0.072	<2		0.032	1.43
11:53	<2		0.052	160	1.10		<2		0.072	3	0.04		1.30
11:56	<2		0.052	105	0.88		<2		0.072	<2		0.032	1.07
11:59	<2		0.052	129	0.98		<2		0.072	<2		0.032	1.17
12:02	<2		0.052	156	1.08		<2		0.072	<2		0.032	1.27
12:05	2	0.05		180	1.17		<2		0.072	<2		0.032	1.36
12:08	<2		0.052	132	0.99		<2		0.072	<2		0.032	1.18
12:11	<2		0.052	96	0.84		<2		0.072	<2		0.032	1.03
12:14	<2		0.052	109	0.89		<2		0.072	<2		0.032	1.08
12:17	<2		0.052	81	0.77		<2		0.072	<2		0.032	0.95
12:20	<2		0.052	76	0.74		<2		0.072	2	0.03		0.93
12:23	<2		0.052	75	0.73		<2		0.072	<2		0.032	0.92
12:26	<2		0.052	74	0.73		<2		0.072	<2		0.032	0.92
12:29	<2		0.052	105	0.88		<2		0.072	<2		0.032	1.06
12:32	<2		0.052	81	0.77		<2		0.072	<2		0.032	0.95
Averages													1.10

0.05

RUN DATA

Number 3

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler
Project Number: 15730.001.008
Operator: VD
Date: 25 Jun 2021
Method: 16
Calibration: 1

Time	H ₂ S			MeSH			DMS			DMDS			TRS
	area	ppm	<	area	ppm	<	area	ppm	<	area	ppm	<	
13:15	<2		0.052	68	0.70		<2		0.072	<2		0.032	0.89
13:18	<2		0.052	62	0.66		3	0.09		<2		0.032	0.87
13:21	<2		0.052	62	0.67		<2		0.072	<2		0.032	0.85
13:24	<2		0.052	62	0.67		<2		0.072	<2		0.032	0.85
13:27	<2		0.052	62	0.66		<2		0.072	3	0.04		0.87
13:30	<2		0.052	63	0.67		<2		0.072	<2		0.032	0.86
13:33	<2		0.052	65	0.68		<2		0.072	<2		0.032	0.87
13:36	<2		0.052	64	0.68		<2		0.072	<2		0.032	0.87
13:39	<2		0.052	68	0.70		<2		0.072	<2		0.032	0.89
13:42	<2		0.052	71	0.71		<2		0.072	<2		0.032	0.90
13:45	2	0.05		77	0.74		4	0.10		<2		0.032	0.96
13:48	<2		0.052	65	0.68		<2		0.072	<2		0.032	0.87
13:51	<2		0.052	66	0.69		<2		0.072	<2		0.032	0.87
13:54	<2		0.052	73	0.72		<2		0.072	<2		0.032	0.91
13:57	<2		0.052	67	0.69		<2		0.072	2	0.03		0.88
14:00	<2		0.052	71	0.71		<2		0.072	<2		0.032	0.90
14:03	<2		0.052	70	0.71		<2		0.072	<2		0.032	0.90
14:06	<2		0.052	71	0.71		<2		0.072	<2		0.032	0.90
14:09	<2		0.052	64	0.67		3	0.09		<2		0.032	0.88
14:12	<2		0.052	66	0.69		<2		0.072	<2		0.032	0.88
Averages				0.05									0.88

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
10:00	<2	<0.052	81	0.76	2	0.08	<2	<0.032	0.84
10:03	2	0.06	84	0.78	<2	<0.072	<2	<0.032	0.84
10:06	2	0.06	93	0.82	<2	<0.072	<2	<0.032	0.88
10:09	2	0.05	132	0.99	<2	<0.072	2	0.03	1.11
10:12	<2	<0.052	123	0.96	<2	<0.072	<2	<0.032	0.96
10:15	<2	<0.052	219	1.30	<2	<0.072	<2	<0.032	1.30
10:18	<2	<0.052	106	0.89	<2	<0.072	<2	<0.032	0.89
10:21	<2	<0.052	126	0.97	<2	<0.072	<2	<0.032	0.97
10:24	<2	<0.052	111	0.91	<2	<0.072	<2	<0.032	0.91
10:27	<2	<0.052	108	0.89	<2	<0.072	<2	<0.032	0.89
10:30	<2	<0.052	105	0.88	<2	<0.072	<2	<0.032	0.88
10:33	<2	<0.052	99	0.85	<2	<0.072	<2	<0.032	0.85
10:36	<2	<0.052	102	0.86	<2	<0.072	4	0.05	0.96
10:39	<2	<0.052	106	0.88	<2	<0.072	<2	<0.032	0.88
10:42	3	0.07	106	0.88	<2	<0.072	<2	<0.032	0.95
10:45	<2	<0.052	132	0.99	<2	<0.072	<2	<0.032	0.99
10:48	<2	<0.052	149	1.06	<2	<0.072	<2	<0.032	1.06
10:51	<2	<0.052	133	1.00	<2	<0.072	<2	<0.032	1.00
10:54	3	0.07	135	1.01	<2	<0.072	<2	<0.032	1.07
10:57	<2	<0.052	171	1.14	9	0.16	<2	<0.032	1.30
Average		<0.052		0.94		<0.072		<0.032	0.98 ✓

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RUN DATA

Number 2

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
11:35	<2	<0.052	93	0.82	4	0.11	<2	<0.032	0.93
11:38	<2	<0.052	104	0.87	<2	<0.072	<2	<0.032	0.87
11:41	<2	<0.052	98	0.85	<2	<0.072	<2	<0.032	0.85
11:44	<2	<0.052	85	0.78	<2	<0.072	<2	<0.032	0.78
11:47	<2	<0.052	147	1.05	<2	<0.072	<2	<0.032	1.05
11:50	<2	<0.052	201	1.24	<2	<0.072	<2	<0.032	1.24
11:53	<2	<0.052	160	1.10	<2	<0.072	3	0.04	1.18
11:56	<2	<0.052	105	0.88	<2	<0.072	<2	<0.032	0.88
11:59	<2	<0.052	129	0.98	<2	<0.072	<2	<0.032	0.98
12:02	<2	<0.052	156	1.08	<2	<0.072	<2	<0.032	1.08
12:05	2	0.05	180	1.17	<2	<0.072	<2	<0.032	1.23
12:08	<2	<0.052	132	0.99	<2	<0.072	<2	<0.032	0.99
12:11	<2	<0.052	96	0.84	<2	<0.072	<2	<0.032	0.84
12:14	<2	<0.052	109	0.89	<2	<0.072	<2	<0.032	0.89
12:17	<2	<0.052	81	0.77	<2	<0.072	<2	<0.032	0.77
12:20	<2	<0.052	76	0.74	<2	<0.072	2	0.03	0.81
12:23	<2	<0.052	75	0.73	<2	<0.072	<2	<0.032	0.73
12:26	<2	<0.052	74	0.73	<2	<0.072	<2	<0.032	0.73
12:29	<2	<0.052	105	0.88	<2	<0.072	<2	<0.032	0.88
12:32	<2	<0.052	81	0.77	<2	<0.072	<2	<0.032	0.77
Average		<0.052		0.91		<0.072		<0.032	0.92 ✓

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RUN DATA

Number 3

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS
	area	ppm	area	ppm	area	ppm	area	ppm	
13:15	<2	<0.052	68	0.70	<2	<0.072	<2	<0.032	0.70
13:18	<2	<0.052	62	0.66	3	0.09	<2	<0.032	0.75
13:21	<2	<0.052	62	0.67	<2	<0.072	<2	<0.032	0.67
13:24	<2	<0.052	62	0.67	<2	<0.072	<2	<0.032	0.67
13:27	<2	<0.052	62	0.66	<2	<0.072	3	0.04	0.75
13:30	<2	<0.052	63	0.67	<2	<0.072	<2	<0.032	0.67
13:33	<2	<0.052	65	0.68	<2	<0.072	<2	<0.032	0.68
13:36	<2	<0.052	64	0.68	<2	<0.072	<2	<0.032	0.68
13:39	<2	<0.052	68	0.70	<2	<0.072	<2	<0.032	0.70
13:42	<2	<0.052	71	0.71	<2	<0.072	<2	<0.032	0.71
13:45	2	0.05	77	0.74	4	0.10	<2	<0.032	0.90
13:48	<2	<0.052	65	0.68	<2	<0.072	<2	<0.032	0.68
13:51	<2	<0.052	66	0.69	<2	<0.072	<2	<0.032	0.69
13:54	<2	<0.052	73	0.72	<2	<0.072	<2	<0.032	0.72
13:57	<2	<0.052	67	0.69	<2	<0.072	2	0.03	0.76
14:00	<2	<0.052	71	0.71	<2	<0.072	<2	<0.032	0.71
14:03	<2	<0.052	70	0.71	<2	<0.072	<2	<0.032	0.71
14:06	<2	<0.052	71	0.71	<2	<0.072	<2	<0.032	0.71
14:09	<2	<0.052	64	0.67	3	0.09	<2	<0.032	0.76
14:12	<2	<0.052	66	0.69	<2	<0.072	<2	<0.032	0.69
Average		<0.052		0.69		<0.072		<0.032	0.71 ✓

✓

RUN DATA

Number 0

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **26 Jun 2021**

Time	H ₂ S		MeSH		DMS		DMDS		TRS ppm
	area	ppm	area	ppm	area	ppm	area	ppm	
CC416806 7.257ppm ✓									
09:05	13721	7.67	<2	<0.11	<2	<0.072	<2	<0.032	7.67
09:08	14535	7.93	<2	<0.11	<2	<0.072	<2	<0.032	7.93
09:11	14516	7.92	<2	<0.11	<2	<0.072	<2	<0.032	7.92
Average		7.84		<0.11		<0.072		<0.032	7.84

RECOVERY DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Before Run 1

Start Time 09:13 End Time 09:27

Recovery Gas to Probe, Time 09:13

Peak Areas, mv-sec			Average	ppm
12553	12693	12570	12606 ✓	7.31

Recovery Gas to GC, Time 09:23

Peak Areas, mv-sec			Average	ppm
15183	15401	15355	15313 ✓	8.16

Recovery 89.6% ✓

✓

RECOVERY DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**
Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

After Run 3 Before Run 4
Start Time 14:27 End Time 15:01

Recovery Gas to Probe, Time 14:27

Peak Areas, mv-sec			Average	ppm
12960	12992	13133	13028 ✓	7.45

Recovery Gas to GC, Time 14:57

Peak Areas, mv-sec			Average	ppm
14768	14713	14525	14669 ✓	7.97

Recovery 93.5% ✓

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method 16

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.55 in. Hg		
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	348	365	473	239
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 38.4 mL/Min	9.05 ppm	9.51 ppm	12.3 ppm	6.22 ppm
Time: 06:02	Peak Areas, mv-sec			
	18150	9129	29752	37042
	18234	8899	29635	36567
	17949	9072	29588	35648
Average Area	18111 ✓	9034 ✓	29658 ✓	36419 ✓

2 Flow = 86.9 mL/Min	4.00 ppm	4.20 ppm	5.44 ppm	2.75 ppm
Time: 08:24	Peak Areas, mv-sec			
	4494	1991	6636	8003
	4478	2048	6673	8033
	4420	2010	6502	8101
Average Area	4464 ✓	2016 ✓	6604 ✓	8046 ✓

3 Flow = 191 mL/Min	1.82 ppm	1.92 ppm	2.48 ppm	1.25 ppm
Time: 08:49	Peak Areas, mv-sec			
	1072	443	1449	1837
	1039	453	1513	1835
	1077	449	1476	1874
Average Area	1063 ✓	448 ✓	1479 ✓	1849 ✓

CALIBRATION SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

H₂S	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	9.05	4.00	1.82			
Area, mv-sec	18111	4464	1063			
Calc. Conc., ppm	8.97	4.07	1.81			
% Error	-0.8	1.7	-0.9			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7702	2.5709	0.9998	2	0.052	
MeSH	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	9.51	4.20	1.92			
Area, mv-sec	9034	2016	448			
Calc. Conc., ppm	9.46	4.25	1.91			
% Error	-0.6	1.1	-0.6			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8751	2.1261	0.9999	2	0.11	
DMS	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	12.3	5.44	2.48			
Area, mv-sec	29658	6604	1479			
Calc. Conc., ppm	12.2	5.49	2.47			
% Error	-0.5	1.0	-0.5			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8718	2.4355	0.9999	2	0.072	
DMDS	1	2	3			
Time	06:02	08:24	08:49			
Concentration, ppm	6.22	2.75	1.25			
Area, mv-sec	36419	8046	1849			
Calc. Conc., ppm	6.21	2.76	1.25			
% Error	-0.2	0.4	-0.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8610	3.0854	>0.9999	2	0.032	

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CALIBRATION DATA

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Ambient Temperature: 72°C		Barometric Pressure: 29.65 in. Hg		
Analyte	H ₂ S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	364	471	238
Ret. Time, sec	16.0	22.5	48.0	127.0

1 Flow = 38.9 mL/Min	8.90 ppm	9.36 ppm	12.1 ppm	6.12 ppm
Time: 06:02	Peak Areas, mv-sec			
	18368	8795	28785	34758
	18368	8383	27462	34707
	18202	8971	28270	35006
Average Area	18313 ✓	8716 ✓	28172 ✓	34824 ✓

2 Flow = 82.3 mL/Min	4.21 ppm	4.42 ppm	5.72 ppm	2.89 ppm
Time: 07:54	Peak Areas, mv-sec			
	4753	2023	6969	8481
	4768	2067	7036	8510
	4706	2032	7080	8577
Average Area	4742 ✓	2041 ✓	7028 ✓	8523 ✓

3 Flow = 175 mL/Min	1.98 ppm	2.08 ppm	2.69 ppm	1.36 ppm
Time: 08:29	Peak Areas, mv-sec			
	1079	476	1619	1945
	1065	464	1599	1933
	1045	467	1556	1954
Average Area	1063 ✓	469 ✓	1591 ✓	1944 ✓

CALIBRATION SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

H ₂ S	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	8.90	4.21	1.98		
Area, mv-sec	18313	4742	1063		
Calc. Conc., ppm	8.80	4.31	1.96		
% Error	-1.2	2.4	-1.2		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8930	2.4749	0.9996	2	0.071

MeSH	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	9.36	4.42	2.08		
Area, mv-sec	8716	2041	469		
Calc. Conc., ppm	9.35	4.43	2.08		
% Error	-0.1	0.1	-0.1		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9432	2.0539	>0.9999	2	0.13

DMS	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	12.1	5.72	2.69		
Area, mv-sec	28172	7028	1591		
Calc. Conc., ppm	12.0	5.81	2.67		
% Error	-0.8	1.5	-0.8		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9111	2.3864	0.9998	2	0.081

DMDS	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	6.12	2.89	1.36		
Area, mv-sec	34824	8523	1944		
Calc. Conc., ppm	6.09	2.92	1.35		
% Error	-0.5	1.1	-0.5		
<u>Calibration Curve</u>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9189	3.0366	0.9999	2	0.038

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ANALYTES AND STANDARDS

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Analyte	H ₂ S	MeSH	DMS	DMDS
Molecular Weight	34.08	48.11	62.14	94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483 /	716 /	1197 /	918 /
Permeation Rate, nL/min*	346	364	471	238

Barometric Pressure: 29.65 in. Hg **Ambient Temperature:** 72 °F
No Oxygen Correction

*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.
Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

$$PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^\circ + T_a) / T_s] \times (P_s / P_b)$$

Where:

PR_{nl} = Permeation Rate by volume, nL/min

PR_{ng} = Permeation Rate by weight, ng/min

V_{mol} = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W_{mol} = Molecular Weight of compound

T_a = Ambient Temperature, °F

T_s = Standard Temperature = 492°R (32 °F)

P_s = Standard Pressure = 29.92 in Hg

P_b = Barometric Pressure, in Hg

For example, H₂S:

$$PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.65) \\ = 346 \text{ nL/min}$$

To calculate concentrations:

$$C = PR_{nl} / F_d$$

Where:

C = Concentration, ppmv

PR_{nl} = Permeation Rate by volume, nL/min

F_d = Flow rate of diluent, mL/min

INSTRUMENT INFORMATION

Client: **New Indy**
Location: **Catawba, NC**
Source: **#2 Combination Boiler**

Method **16**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

File: C:\Data\210625 New Indy Catawba No. 2 CB.trs
Program Version: 2.0, built 15 May 2017 File Version: 2.0
Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061
Detector Range: 10

Gases		Temperatures, °C	Columns
Press.	Flow		
psi	mL/min		
H ₂	30	50	Primary: Carbopack
Air	30	60	Secondary: N/A
Carrier	50	30	Sample Loop: 4"

Injection Cycle

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

Default Integration Parameters

Signal Threshold 0.67 mv Peak detection window ±10 sec
Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

Dynacalibrator

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.65 in. Hg

RUN SUMMARY

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
-----------------------	-------------------------------	--------------------------------	----------------------------------

Time: 10:00 to 11:00

Run Averages

12.7 6.9 239

Pre-run Bias at 08:17

Zero Bias	0.1	0.0	0
Span Bias	10.1	10.1	235
Span Gas	10.1	10.2	242

Post-run Bias at 11:02

Zero Bias	0.1	0.0	3
Span Bias	10.1	10.2	234
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.8 6.9 247

RUN SUMMARY

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 11:35 to 12:35

Run Averages

12.6 6.8 236

Pre-run Bias at 11:02

Zero Bias	0.1	0.0	3
Span Bias	10.1	10.2	234
Span Gas	10.1	10.2	242

Post-run Bias at 12:37

Zero Bias	0.1	0.0	4
Span Bias	10.1	10.3	233
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.7 6.8 245

RUN SUMMARY

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	SO ₂ EPA 6C ppm
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Time: 13:15 to 14:15

Run Averages

12.2 7.4 227

Pre-run Bias at 12:37

Zero Bias	0.1	0.0	4
Span Bias	10.1	10.3	233
Span Gas	10.1	10.2	242

Post-run Bias at 14:18

Zero Bias	0.1	0.0	3
Span Bias	10.1	10.3	235
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.3 7.3 235

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂ mv	%	CO ₂ mv	%	SO ₂ mv	ppm
With NCGs						
Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter						
Point 1						
10:01	4314	13.0	2711	6.8	2231	223
10:02	4127	12.4	2693	6.8	2427	243
10:03	3866	11.6	2882	7.2	3028	303
10:04	4048	12.2	3101	7.8	2931	294
10:05	4371	13.1	2830	7.1	2792	280
10:06	4214	12.7	2598	6.5	2744	275
10:07	4404	13.2	2717	6.8	2549	255
10:08	4432	13.3	2556	6.4	2381	239
10:09	4440	13.3	2525	6.3	2263	227
10:10	4322	13.0	2519	6.3	2158	216
10:11	4328	13.0	2637	6.6	2162	217
10:12	4385	13.2	2626	6.6	2193	220
10:13	4522	13.6	2530	6.3	2241	224
10:14	4412	13.3	2437	6.1	2406	241
10:15	4514	13.6	2516	6.3	2379	238
10:16	4438	13.3	2431	6.1	2199	220
10:17	4257	12.8	2535	6.4	2174	218
10:18	4213	12.7	2737	6.9	2241	224
10:19	4345	13.1	2739	6.9	2209	221
10:20	4343	13.1	2616	6.6	2331	234
Point 2						
10:21	4252	12.8	2645	6.6	2363	237
10:22	4189	12.6	2732	6.9	2403	241
10:23	4205	12.6	2804	7.0	2439	244
10:24	4123	12.4	2800	7.0	2285	229
10:25	4217	12.7	2868	7.2	2134	214
10:26	4152	12.5	2778	7.0	2284	229
10:27	4109	12.4	2854	7.2	2237	224
10:28	4114	12.4	2884	7.2	2323	233
10:29	4040	12.2	2895	7.3	2347	235
10:30	4070	12.2	2951	7.4	2390	239
10:31	3914	11.8	2946	7.4	2766	277
10:32	3838	11.5	3092	7.8	2952	296
10:33	3878	11.7	3148	7.9	2802	281
10:34	3881	11.7	3100	7.8	2829	283
10:35	3805	11.4	3128	7.8	2819	282
10:36	3986	12.0	3176	8.0	2678	268
10:37	4082	12.3	2992	7.5	2502	251

RUN DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
10:38	4118	12.4	2910	7.3	2587	259
10:39	4064	12.2	2896	7.3	2602	261
10:40	4051	12.2	2923	7.3	2579	258
Point 3						
10:41	4186	12.6	2928	7.3	2285	229
10:42	4176	12.6	2836	7.1	2194	220
10:43	4231	12.7	2826	7.1	2244	225
10:44	4271	12.8	2751	6.9	2227	223
10:45	4322	13.0	2714	6.8	2311	231
10:46	4389	13.2	2648	6.6	2366	237
10:47	4368	13.1	2573	6.5	2239	224
10:48	4347	13.1	2602	6.5	2140	214
10:49	4333	13.0	2620	6.6	2257	226
10:50	4389	13.2	2635	6.6	2143	215
10:51	4232	12.7	2598	6.5	2222	223
10:52	4255	12.8	2745	6.9	2179	218
10:53	4285	12.9	2723	6.8	2198	220
10:54	4371	13.1	2691	6.7	2220	222
10:55	4374	13.2	2595	6.5	2301	230
10:56	4456	13.4	2583	6.5	2244	225
10:57	4396	13.2	2507	6.3	2304	231
10:58	4354	13.1	2561	6.4	2323	233
10:59	4335	13.0	2615	6.6	2320	232
11:00	4399	13.2	2622	6.6	2200	220
Avg	4231	12.7	2747	6.9	2388	239

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
With NCGs						
Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter						
Point 1						
11:36	4344	13.1	2609	6.5	2261	226
11:37	4302	12.9	2557	6.4	2328	233
11:38	4175	12.6	2622	6.6	2380	238
11:39	4135	12.4	2769	6.9	2403	241
11:40	4229	12.7	2771	7.0	2418	242
11:41	4252	12.8	2693	6.8	2431	244
11:42	4261	12.8	2631	6.6	2427	243
11:43	4153	12.5	2685	6.7	2490	249
11:44	4244	12.8	2730	6.8	2490	249
11:45	4281	12.9	2656	6.7	2413	242
11:46	4400	13.2	2615	6.6	2123	213
11:47	4480	13.5	2486	6.2	2236	224
11:48	4425	13.3	2412	6.0	2247	225
11:49	4445	13.4	2459	6.2	2277	228
11:50	4390	13.2	2462	6.2	2327	233
11:51	4419	13.3	2488	6.2	2313	232
11:52	4366	13.1	2479	6.2	2272	228
11:53	4331	13.0	2541	6.4	2031	203
11:54	4329	13.0	2569	6.4	2137	214
11:55	4207	12.7	2585	6.5	2166	217
Point 2						
11:56	4245	12.8	2684	6.7	2242	225
11:57	4192	12.6	2667	6.7	2295	230
11:58	4263	12.8	2684	6.7	2253	226
11:59	4309	13.0	2615	6.6	2229	223
12:00	4311	13.0	2583	6.5	2253	226
12:01	4327	13.0	2550	6.4	2272	228
12:02	4234	12.7	2559	6.4	2271	227
12:03	4198	12.6	2673	6.7	2349	235
12:04	4358	13.1	2680	6.7	2273	228
12:05	4368	13.1	2534	6.4	2076	208
12:06	4291	12.9	2540	6.4	2099	210
12:07	4292	12.9	2607	6.5	2241	224
12:08	4287	12.9	2607	6.5	2314	232
12:09	4245	12.8	2624	6.6	2453	246
12:10	4182	12.6	2653	6.7	2521	253
12:11	4156	12.5	2744	6.9	2493	250
12:12	4206	12.6	2740	6.9	2592	260

RUN DATA

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
12:13	4209	12.7	2689	6.7	2605	261
12:14	4238	12.7	2684	6.7	2666	267
12:15	4158	12.5	2669	6.7	2715	272
Point 3						
12:16	4055	12.2	2753	6.9	2751	276
12:17	3990	12.0	2868	7.2	2688	269
12:18	3939	11.8	2950	7.4	2548	255
12:19	3957	11.9	2993	7.5	2572	258
12:20	3826	11.5	3008	7.5	2717	272
12:21	3759	11.3	3146	7.9	2831	284
12:22	3791	11.4	3207	8.0	2823	283
12:23	3992	12.0	3141	7.9	2505	251
12:24	4042	12.2	2991	7.5	2388	239
12:25	4027	12.1	2983	7.5	2136	214
12:26	4021	12.1	2991	7.5	2238	224
12:27	4113	12.4	2988	7.5	2358	236
12:28	4294	12.9	2842	7.1	2311	231
12:29	4137	12.4	2721	6.8	2274	228
12:30	4179	12.6	2858	7.2	2199	220
12:31	4196	12.6	2831	7.1	2153	216
12:32	4211	12.7	2813	7.1	2155	216
12:33	4133	12.4	2811	7.1	2187	219
12:34	4123	12.4	2892	7.3	2167	217
12:35	4132	12.4	2906	7.3	2212	222
Avg	4203	12.6	2722	6.8	2360	236

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂ mv	%	CO ₂ mv	%	SO ₂ mv	ppm
With NCGs						
Point 1 Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter						
Point 1						
13:16	4025	12.1	2990	7.5	2283	229
13:17	4006	12.0	2985	7.5	2344	235
13:18	4014	12.1	3013	7.6	2374	238
13:19	4052	12.2	2989	7.5	2389	239
13:20	4026	12.1	2953	7.4	2531	254
13:21	4003	12.0	2988	7.5	2655	266
13:22	4076	12.3	2998	7.5	2518	252
13:23	4126	12.4	2928	7.3	2216	222
13:24	4036	12.1	2880	7.2	2164	217
13:25	3976	12.0	2977	7.5	2201	220
13:26	4029	12.1	3036	7.6	2207	221
13:27	3877	11.7	3020	7.6	2279	228
13:28	3883	11.7	3156	7.9	2224	223
13:29	3890	11.7	3160	7.9	2165	217
13:30	3945	11.9	3138	7.9	2191	219
13:31	4007	12.1	3072	7.7	2198	220
13:32	3980	12.0	3028	7.6	2190	219
13:33	4062	12.2	3024	7.6	2210	221
13:34	4082	12.3	2955	7.4	2299	230
13:35	4002	12.0	2933	7.4	2245	225
Point 2						
13:36	4004	12.0	3017	7.6	2066	207
13:37	4042	12.2	3000	7.5	2123	213
13:38	4037	12.1	2961	7.4	2120	212
13:39	4072	12.2	2957	7.4	2115	212
13:40	4138	12.4	2912	7.3	2161	216
13:41	4128	12.4	2868	7.2	2192	220
13:42	4223	12.7	2882	7.2	2218	222
13:43	4167	12.5	2797	7.0	2404	241
13:44	4237	12.7	2841	7.1	2304	231
13:45	4204	12.6	2772	7.0	2163	217
13:46	4107	12.4	2820	7.1	2120	212
13:47	4040	12.2	2935	7.4	2206	221
13:48	4047	12.2	3002	7.5	2151	215
13:49	4005	12.0	3011	7.6	2182	219
13:50	4072	12.2	3028	7.6	2200	220
13:51	4137	12.4	2957	7.4	2212	222
13:52	4252	12.8	2874	7.2	2237	224

RUN DATA

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
13:53	4203	12.6	2762	6.9	2299	230
13:54	4079	12.3	2834	7.1	2325	233
13:55	4099	12.3	2931	7.4	2314	232
Point 3						
13:56	3918	11.8	2960	7.4	2285	229
13:57	4031	12.1	3101	7.8	2072	208
13:58	4012	12.1	3007	7.5	2181	218
13:59	4139	12.4	2984	7.5	2175	218
14:00	4064	12.2	2888	7.2	2212	222
14:01	4020	12.1	2962	7.4	2361	237
14:02	4061	12.2	2999	7.5	2467	247
14:03	4059	12.2	2957	7.4	2321	232
14:04	4063	12.2	2957	7.4	2171	217
14:05	4076	12.3	2967	7.4	2230	223
14:06	4174	12.6	2927	7.3	2244	225
14:07	4149	12.5	2840	7.1	2293	230
14:08	4155	12.5	2860	7.2	2376	238
14:09	3989	12.0	2886	7.2	2434	244
14:10	4063	12.2	3018	7.6	2362	237
14:11	4079	12.3	2977	7.5	2283	229
14:12	4160	12.5	2927	7.3	2279	228
14:13	4188	12.6	2828	7.1	2288	229
14:14	4006	12.0	2839	7.1	2371	238
14:15	3961	11.9	3031	7.6	2439	244
Avg	4063	12.2	2955	7.4	2264	227

BIAS

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:17

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	24	0.1	0.1	0.5	Pass
Span	10.1	3365	10.1	0.0	0.0	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	6	0.0	0.0	0.0	Pass
Span	10.2	4038	10.1	-0.1	-0.5	Pass

SO₂

Method: EPA 6C
Span Conc. 458 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	-0	0	0	0.0	Pass
Span	242	2341	235	-7	-1.5	Pass

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 11:02

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	27	0.1	0.1	0.5	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.1	27	0.1	0.0	0.0	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	24	0.0	0.0	0.0	Pass
Span	10.2	4048	10.2	0.0	0.0	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	24	0.0	0.0	0.0	Pass
Span	10.1	4048	10.2	0.1	0.5	Pass

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 11:02

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	31	3	3	0.7	Pass
Span	242	2334	234	-8	-1.7	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	31	3	3	0.7	Pass
Span	235	2334	234	-1	-0.2	Pass

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 12:37

O₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	13	0.1	0.1	0.5	Pass
Span	10.1	3353	10.1	0.0	0.0	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.1	13	0.1	0.0	0.0	Pass
Span	10.1	3353	10.1	0.0	0.0	Pass

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.2	4094	10.3	0.1	0.5	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.2	4094	10.3	0.1	0.5	Pass

*Bias No. 2

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 12:37

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	35	4	4	0.9	Pass
Span	242	2329	233	-9	-2.0	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	ppm	mv	ppm	%	
Zero	3	35	4	1	0.2
Span	234	2329	233	-1	-0.2

*Bias No. 2

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 14:18

O₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	34	0.1	0.1	0.5	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.1	34	0.1	0.0	0.0	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass

*Bias No. 3

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.2	4085	10.3	0.1	0.5	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	%	mv	%	%	%	
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.3	4085	10.3	0.0	0.0	Pass

*Bias No. 3

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 14:18

SO₂
Method: EPA 6C
Span Conc. 458 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	30	3	3	0.7	Pass
Span	242	2344	235	-7	-1.5	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift		Status
Gas	ppm	mv	ppm	ppm	%	
Zero	4	30	3	-1	-0.2	Pass
Span	233	2344	235	2	0.4	Pass

*Bias No. 3

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:01

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	-2
10.1 ✓	XC013544B	3344
20.2 ✓	CC275468	6752

Curve Coefficients

Slope	Intercept	Corr. Coeff.
333.7	-15	>0.9999

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	7
10.2 ✓	XC013544B	4046
20.3 ✓	CC275468	8070

Curve Coefficients

Slope	Intercept	Corr. Coeff.
397.8	6	1.0000

CALIBRATION DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:01

SO₂

Method: EPA 6C

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero	-	-1
242 ✓	CC234516	2413
458 ✓	EB0108003	4578

Curve Coefficients

Slope	Intercept	Corr. Coeff.
10.00	-4	>0.9999

CALIBRATION ERROR DATA

Number 1

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

Start Time: 08:01

O₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 333.7 Intercept -14.5

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	-2	0.0	0.0	0.0	Pass
10.1	3344	10.1	0.0	0.0	Pass
20.2	6752	20.3	0.1	0.5	Pass

CO₂

Method: EPA 3A
Span Conc. 20.3 %

Slope 397.8 Intercept 6.2

Standard	Response	Result	Difference	Error	Status
%	mv	%	%	%	
Zero	7	0.0	0.0	0.0	Pass
10.2	4046	10.2	0.0	0.0	Pass
20.3	8070	20.3	0.0	0.0	Pass

SO₂

Method: EPA 6C
Span Conc. 458 ppm

Slope 10.00 Intercept -4

Standard	Response	Result	Difference	Error	Status
ppm	mv	ppm	ppm	%	
Zero	-1	0	0	0.0	Pass
242	2413	242	0	0.0	Pass
458	4578	458	0	0.0	Pass

METHODS AND ANALYZERS

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Project Number: **15730.001.008**
Operator: **VD**
Date: **25 Jun 2021**

File: C:\Users\Dubay\\Desktop\Catawba\210625 New Indy Catawba No. 2 CB.cem

Program Version: 2.2, built 3 Jul 2020 **File Version:** 2.04

Computer: WSAUBCHEMLABGC1 **Trailer:** 281

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T802 s/n: 172
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.3

Channel 5

Analyte	SO₂
Method	EPA 6C, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T100H SN 374
Full-Scale Output, mv	10000
Analyzer Range, ppm	500
Span Concentration, ppm	458



APPENDIX G LABORATORY REPORT



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

July 15, 2021

Daniel Mallett
New-Indy Catawba LLC
5300 Cureton Ferry Road
Catawba, SC 29704

RE: DHEC Order

Dear Daniel:

Enclosed are the results of the samples submitted to our laboratory on June 29, 2021. For your reference, these analyses have been assigned our service request number P2103465.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental


By Sue Anderson at 5:44 pm, Jul 15, 2021

Sue Anderson
Project Manager



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: New-Indy Catawba LLC
Project: DHEC Order

Service Request No: P2103465

CASE NARRATIVE

The samples were received intact under chain of custody on June 29, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Sulfur Analysis

The samples were analyzed for five sulfur compounds using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413- 19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA01627201 9-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: New-Indy Catawba LLC
Project ID: DHEC Order

Service Request: P2103465

Date Received: 6/29/2021
Time Received: 10:20

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Sulfur Liq - Sulfur
3A-TRS 1000	P2103465-001	Water	6/24/2021	10:00	X
3A-TRS 1115	P2103465-002	Water	6/24/2021	11:15	X
3A-TRS 1210	P2103465-003	Water	6/24/2021	12:10	X
3A-TRS 1331	P2103465-004	Water	6/24/2021	13:31	X
3A-TRS 1450	P2103465-005	Water	6/24/2021	14:50	X
2A-TRS 1510	P2103465-006	Water	6/24/2021	15:10	X
2B-TRS 1515	P2103465-007	Water	6/24/2021	15:15	X
3A-TRS 1600	P2103465-008	Water	6/24/2021	16:00	X
2A-TRS 1700	P2103465-009	Water	6/24/2021	17:00	X
2B-TRS 1705	P2103465-010	Water	6/24/2021	17:05	X
2A-TRS 1845	P2103465-011	Water	6/24/2021	18:45	X
2B-TRS 1850	P2103465-012	Water	6/24/2021	18:50	X
3A-TRS Duplicate 1115	P2103465-013	Water	6/24/2021	11:15	X
2A-TRS Duplicate 1510	P2103465-014	Water	6/24/2021	15:10	X
2B-TRS Duplicate 1515	P2103465-015	Water	6/24/2021	15:15	X
3A-TRS 1403	P2103465-016	Water	6/25/2021	14:03	X
3A-TRS 1630	P2103465-017	Water	6/25/2021	16:30	X
3A-TRS 1740	P2103465-018	Water	6/25/2021	17:40	X
3A-TRS 1845	P2103465-019	Water	6/25/2021	18:45	X
3A-TRS 0817	P2103465-020	Water	6/25/2021	08:17	X
3A-TRS 0924	P2103465-021	Water	6/25/2021	09:24	X
3A-TRS 1030	P2103465-022	Water	6/25/2021	10:30	X
2A-TRS 1035	P2103465-023	Water	6/25/2021	10:35	X
2B-TRS 1040	P2103465-024	Water	6/25/2021	10:40	X
2A-TRS 1205	P2103465-025	Water	6/25/2021	12:05	X
2B-TRS 1210	P2103465-026	Water	6/25/2021	12:10	X
3A-TRS 1200	P2103465-027	Water	6/25/2021	12:00	X
3A-TRS 1255	P2103465-028	Water	6/25/2021	12:55	X
2A-TRS 1345	P2103465-029	Water	6/25/2021	13:45	X
2B-TRS 1350	P2103465-030	Water	6/25/2021	13:50	X
3A-TRS 1010	P2103465-031	Water	6/26/2021	10:10	X
3A-TRS 1125	P2103465-032	Water	6/26/2021	11:25	X
3A-TRS 1230	P2103465-033	Water	6/26/2021	12:30	X
3B-TRS 1305	P2103465-034	Water	6/26/2021	13:05	X
3A-TRS 1400	P2103465-035	Water	6/26/2021	14:00	X
3B-TRS 1415	P2103465-036	Water	6/26/2021	14:15	X
3A-TRS 1445	P2103465-037	Water	6/26/2021	14:45	X
3B-TRS 1530	P2103465-038	Water	6/26/2021	15:30	X
3A-TRS 1550	P2103465-039	Water	6/26/2021	15:50	X



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Fax (805) 526-7270

Soil / Water - Chain of Custody Record & Analytical Service Request

Page 1 of 9

Requested Turnaround Time in Business Days (Surcharges) please circle 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard	CAS Project No. P203465
---	----------------------------

Company Name & Address (Reporting Information) New Indv Containe Board		Project Name DHEC Order		Analysis		Comments		
Project Manager Don Mallett		Project Number						
Phone (805) 981-8010		P.O. # / Credit Card / Billing Information						
Fax Don.mallett@new-indv.cb.com								
Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Water	Soil	Solid	Other	
3A-TRS #1 1000	①	6-24-21	1000	X				Liquid Sulfur
3A-TRS #2 1000		6-24-21	1000	X				Liquid Sulfur
3A-TRS #1 1115	②	6-24-21	1115	X				Liquid Sulfur
3A-TRS #2 1115		6-24-21	1115	X				Liquid Sulfur
3A-TRS #1 1210	③	6-24-21	1210	X				Liquid Sulfur
3A-TRS #2 1210		6-24-21	1210	X				Liquid Sulfur
3A-TRS #1 1331	④	6-24-21	1331	X				Liquid Sulfur
3A-TRS #2 1331		6-24-21	1331	X				Liquid Sulfur
3A-TRS #1 1450	⑤	6-24-21	1450	X				Liquid Sulfur
3A-TRS #2 1450		6-24-21	1450	X				Liquid Sulfur

Report Tier Levels - please select		Tier III (Results + QC & Calibration Summaries) _____		Tier IV (Data Validation Package) 10% Surcharge _____		EDD required Yes / No _____	
Tier I - Results (Default if not specified) _____		Tier II (Results + QC Summaries) _____		Type: _____			
Relinquished by: (Signature) Mallett	Date: 6/24/21	Time: 1010	Received by: (Signature) Ref Secured Area	Date: 6-24-21	Time: 1010/1120		
Relinquished by: (Signature) Mallett	Date: 6/24/21	Time: 1215	Received by: (Signature) Ref Secured Area	Date: 6-24-21	Time: 1215/1340		
Relinquished by: (Signature) Mallett	Date: 6/24/21	Time: 1340	Received by: (Signature) Ref Secured Area	Date: 6-24-21	Time: 1415		



Soil / Water - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Company Name & Address (Reporting Information)

New Indy Container Board

Project Manager
Dan Mallett

Phone

(805) 981-8010

Email Address for Result Reporting

dan.mallett@new-indy.cb.com

Fax

Project Name

DHEC Order

Project Number

P.O. # / Credit Card / Billing Information

Requested Turnaround Time in Business Days (Surcharges) please circle

1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

CAS Project No.

103465

CAS Contact

Analysis

Comments

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Water	Soil	Solid	Other			
2A-TRS #1	1510	6-24-21	1510	X					Liquid Sulfur	Collection
2A-TRS #2	1510	6-24-21	1510	X						Date and
2B-TRS #1	1515	6-24-21	1515	X						Time on
2B-TRS #2	1515	6-24-21	1515	X						critical for
3A-TRS #1	1600	6-24-21	1600	X						sample
3A-TRS #2	1600	6-24-21	1600	X						identification
2A-TRS #1	1700	6-24-21	1700	X						
2A-TRS #2	1700	6-24-21	1700	X						
2B-TRS #1	1705	6-24-21	1705	X						
2B-TRS #2	1705	6-24-21	1705	X						

Report Tier Levels - please select

Tier I - Results (Default if not specified)

Tier II (Results + QC Summaries)

Tier III (Results + QC & Calibration Summaries)

Tier IV (Data Validation Package) 10% Surcharge

EDD required Yes / No

Type:

Relinquished by (Signature)

Dale Peterson

Relinquished by (Signature)

John Wilson

Relinquished by (Signature)

Dale Peterson

Date: 6/24/21

Time: 1515/1520

Date: 6/24/21

Time: 1600

Date: 6/24/21

Time: 1705/1710

Date: 6/24/21

Time: 1515/1520

Date: 6/24/21

Time: 1600

Date: 6/24/21

Time: 1705/1710

Date: 6/24/21

Time: 1515/1520

Date: 6/24/21

Time: 1600

Date: 6/24/21

Time: 1705/1710

15730.001.008

Pulp Dryer, #3 Paper Machine,

#2-3 SMTVA, & #1-2 CB

Emission Report

1020



Page 3 of 9

New Indy Contains Board

Phone (803) 981-8010

dan.mallett@new-indy.cd.com

	(1)	x	Liquid sulfur	* Sample date / time crucial for identification
ZZA - TRS #1	1845	x	✓	
ZZA - TRS #2	1845	x	✓	
ZB - TRS #1	1850	x	✓	
ZB - TRS #2	1850	x	✓	

התאחדות

Tier 1 - Results (Default if not specified)

Tier III (Results + QC & Calibration Summaries)

Tier IV (Data Validation Package) 10% Surcharge

Orle Pedrison
Relinquished by: (Signature)

Date:	6/24/21	Time:	1855	Received by: (Signature)	Ref secure
-------	---------	-------	------	--------------------------	------------

Date:	Time:	Received by: (Signature)
-------	-------	--------------------------

Date:	Time:	Received by: (Signature)
-------	-------	--------------------------

Date: 10-29-10 Time: 10:20

Date: 10-29-10 Time: 10:20

Date: 10-29-10 Time: 10:20



**2655 Park Center Drive, Suite A
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Phone (805) 526-7161
Fax (805) 526-7270**

Company Name & Address (Reporting Information)

New Indy Container Board
5300 Guelton Ferry Rd
Catawba, SC 29704

Project Manager

Project Manager:
Don Mallett

Phone (803) 981-8010

Email Address for Result Reporting

dan.mallett@new-indy.cb.com

[illegible]

Report Tier Levels - please select

Table 1 - Results (Default if not specified)

Chapter 11 (Results + QC Summaries)

Religions held by (Signatures)



(einfaches) xq par simple

Relinquished by: (Signature)

563

EDD required Yes / No

Type:

Tier III (Results + QC & Calibration Summaries)

Tier IV (Data Validation Package) 10% Surcharge

Date:	Time:	Received by: (Signature)
-------	-------	--------------------------

17-56-21 1405/1035/1745 D.F.

Date:	Time:	Received by: (Signature)
-------	-------	--------------------------

Date:	Time:	Received by: (Signature)
-------	-------	--------------------------

[illegible]

Date: _____ Time: _____

6-25-21 1405/1635/1745

Date: _____ Time: _____

Date: / / Time:

10419	
-------	--

15730.001.008
Paper Machine,
TVs, & #1-2 CBs
Emission Report



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Soil / Water - Chain of Custody Record & Analytical Service Request

Page 6 of 9

Requested Turnaround Time in Business Days (Surcharges) please circle				CAS Project No.	
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard				103465	
Project Name DHEC Order				Analysis	
Project Number					
P.O. # / Credit Card / Billing Information					
Company Name & Address (Reporting Information)		Laboratory ID Number		Date Collected	
New Indy Containers Board 5300 Colton Ferry Rd Cotuit, MA 01945		20		6-25-21	
Project Manager Don Mallett		21		6-25-21	
Phone (903) 981-8010		22		6-25-21	
Fax		23		6-25-21	
Email Address for Result Reporting don.mallett@new-indy.cb.com		24		6-25-21	
		25		6-25-21	
		26		6-25-21	
		27		6-25-21	
		28		6-25-21	
		29		6-25-21	
		30		6-25-21	
		31		6-25-21	
		32		6-25-21	
		33		6-25-21	
		34		6-25-21	
		35		6-25-21	
		36		6-25-21	
		37		6-25-21	
		38		6-25-21	
		39		6-25-21	
		40		6-25-21	
		41		6-25-21	
		42		6-25-21	
		43		6-25-21	
		44		6-25-21	
		45		6-25-21	
		46		6-25-21	
		47		6-25-21	
		48		6-25-21	
		49		6-25-21	
		50		6-25-21	
		51		6-25-21	
		52		6-25-21	
		53		6-25-21	
		54		6-25-21	
		55		6-25-21	
		56		6-25-21	
		57		6-25-21	
		58		6-25-21	
		59		6-25-21	
		60		6-25-21	
		61		6-25-21	
		62		6-25-21	
		63		6-25-21	
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		68		6-25-21	
		69		6-25-21	
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		71		6-25-21	
		72		6-25-21	
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		74		6-25-21	
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		78		6-25-21	
		79		6-25-21	
		80		6-25-21	
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		82		6-25-21	
		83		6-25-21	
		84		6-25-21	
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		95		6-25-21	
		96		6-25-21	
		97		6-25-21	
		98		6-25-21	
		99		6-25-21	
		100		6-25-21	
		101		6-25-21	
		102		6-25-21	
		103		6-25-21	
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		340		6-25-21	
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2855 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Soil / Water - Chain of Custody Record & Analytical Service Request

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Requested Turnaround Time In Business Days (Surcharges) please circle										CAS Project No.
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard										12103465
CAS Contact										
Project Name DHEC Order										
Project Number										
P.O. # / Credit Card / Billing Information										
Analysis										
Liquid Sulfur										
* Collection date and time or crucial for sample identification										
Comments										
Client Sample ID										
Laboratory ID Number										
Date Collected										
Time Collected										
Water										
Soil										
Solid										
Other										
2A - TRS #1 1205 6-25-21 1205										
2A - TRS #2 1205 6-25-21 1205										
2B - TRS #1 1210 6-25-21 1210										
2B - TRS #2 1210 6-25-21 1210										
3A - TRS #1 1200 6-25-21 1200										
3A - TRS #2 1200 6-25-21 1200										
3A - TRS #1 1255 6-25-21 1255										
3A - TRS #2 1255 6-25-21 1255										
2A - TRS #1 1345 6-25-21 1345										
2A - TRS #2 1345 6-25-21 1345										
2B - TRS #1 1350 6-25-21 1350										
2B - TRS #2 1350 6-25-21 1350										
Report Tier Levels - please select										
Tier I - Results (Default if not specified)										
Tier II (Results + QC Summaries)										
Tier III (Results + QC & Calibration Summaries)										
Tier IV (Data Validation Package) 10% Surcharge										
EDD required Yes / No										
Type:										
Relinquished by (Signature)										
Date: 6/25/21 Time: 12:15/1355										
Relinquished by (Signature)										
Date: 6/25/21 Time: 12:05/1300										
Relinquished by (Signature)										
Date: 6/25/21 Time: 12:05/1300										



Soil / Water - Chain of Custody Record & Analytical Service Request

Page 8 of 9

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Company Name & Address (Reporting Information)

New Indy Container Board
5300 Culeton Ferry Rd
Castroville, CA 95004

Project Manager

Don Mallett

Phone (805) 981-8010

Fax

Email Address for Result Reporting

don.mallett@new-indy.cb.com

Project Name

DHEC Order

Project Number

P.O. # / Credit Card / Billing Information

Requested Turnaround Time in Business Days (Surcharges) please circle

1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

CAS Project No.

2103465

ICAS Contact

Analysis

Comments

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Water	Solid	Other	Analysis	Comments
3A-TRS #1	1010	6-26-21	1010	X			Liquid Sulfur	* Collection
3A-TRS #2	1010	6-26-21	1010	X				date and time
3A-TRS #1	1125	6-26-21	1125	X				ore crucial for
3A-TRS #2	1125	6-26-21	1125	X				sample
3A-TRS #1	1230	6-26-21	1230	X				identification
3A-TRS #2	1230	6-26-21	1230	X				
3B-TRS #1	1305	6-26-21	1305	X				
3B-TRS #2	1305	6-26-21	1305	X				
3A-TRS #1	1400	6-26-21	1400	X				
3A-TRS #2	1400	6-26-21	1400	X				
3B-TRS #1	1415	6-26-21	1415	X				
3B-TRS #2	1415	6-26-21	1415	X				

Report Tier Levels - please select

Tier I - Results (Default if not specified)

Tier II (Results + QC Summaries)

Tier III (Results + QC & Calibration Summaries)

Tier IV (Data Validation Package) 10% Surcharge

EDD required Yes / No

Type:

Relinquished by: (Signature)

Dale Robinson

Relinquished by: (Signature)

Dale Robinson

Relinquished by: (Signature)

566

Date:

6-26-21

Time:

1015/1130

Date:

6-26-21

Time:

1015/1130

Date:

6-26-21

Time:

1015/1130

Date:

6-26-21

Time:

1015/1130



2855 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Company Name & Address (Reporting Information)

New Indy Container Board
5300 Guelton Ferry Rd
Cottawbwa, SC 29704

Project Manager

Don Mallett

Phone (803) 981-8010

Email Address for Result Reporting

dan.mallett@new-indy.cb.com

[illegible]

Report Tier Levels - please select

Tier 1 - Results (Default if not specified)

Tier II (Results + QC Summaries)

Relinquished by: (Signature)

900000

Relinquished by: (Signature)

Completed by: (Signature)

Relinquished by: (Signature)

56

Tier III (Results + QC & Calibration Summaries)

Tier IV (Data Validation Package) 10% Surcharge

Date: _____ Time: _____ Received by: (Signature) _____

12-92-0145

Date:	Time:	Received by: (Signature)
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12-22-21 155 REF SP10

Date:	Time:	Received by: (Signature)
-------	-------	--------------------------

EDD required Yes / No

Type:

Date: _____

2-9

Date:	
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22

Date: _____

MISSION REPORT

**Pulp Dryer, #3 Paper Machine
#2-3 SDTVs, & #1-2 CB**

ALS Environmental Sample Acceptance Check Form

Client: New-Indy Catawba LLC Work order: P2103465
Project: DHEC Order
Sample(s) received on: 6/29/21 Date opened: 6/29/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | Yes | No | N/A |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cooler Temperature: 2° C Blank Temperature: ° C | | | |
| 8 Were custody seals on outside of cooler/Box/Container? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9 Do containers have appropriate preservation , according to method/SOP or Client specified information? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there a client indication that the submitted samples are pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials checked for presence/absence of air bubbles? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 Tubes: Are the tubes capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11 Badges: Are the badges properly capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103465-001.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-001.02	40mL VOA NP				A	
P2103465-002.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-002.02	40mL VOA NP				A	
P2103465-003.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-003.02	40mL VOA NP				A	
P2103465-004.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-004.02	40mL VOA NP				A	
P2103465-005.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-005.02	40mL VOA NP				A	
P2103465-006.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-006.02	40mL VOA NP				A	
P2103465-007.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-007.02	40mL VOA NP				A	
P2103465-008.01	40mL VOA NP		1	6	A	GG 7/1/21

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

**ALS Environmental
Sample Acceptance Check Form**

Client: New-Indy Catawba LLC Work order: P2103465
Project: DHEC Order
Sample(s) received on: 6/29/21 Date opened: 6/29/21 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103465-008.02	40mL VOA NP				A	
P2103465-009.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-009.02	40mL VOA NP				A	
P2103465-010.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-010.02	40mL VOA NP				A	
P2103465-011.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-011.02	40mL VOA NP				A	
P2103465-012.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-012.02	40mL VOA NP				A	
P2103465-013.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-013.02	40mL VOA NP				A	
P2103465-014.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-014.02	40mL VOA NP				A	
P2103465-015.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-015.02	40mL VOA NP				A	
P2103465-016.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-016.02	40mL VOA NP				A	
P2103465-017.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-017.02	40mL VOA NP				A	
P2103465-018.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-018.02	40mL VOA NP				A	
P2103465-019.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-019.02	40mL VOA NP				A	
P2103465-020.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-020.02	40mL VOA NP				A	
P2103465-021.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-021.02	40mL VOA NP				A	
P2103465-022.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-022.02	40mL VOA NP				A	
P2103465-023.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-023.02	40mL VOA NP				A	
P2103465-024.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-024.02	40mL VOA NP				A	
P2103465-025.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-025.02	40mL VOA NP				A	
P2103465-026.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-026.02	40mL VOA NP				A	
P2103465-027.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-027.02	40mL VOA NP				A	
P2103465-028.01	40mL VOA NP		1	6	A	GG 7/9/21

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO₂, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1000
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-001

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	200,000	170	
74-93-1	Methyl Mercaptan	740	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1115
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-002

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	210,000	170	
74-93-1	Methyl Mercaptan	700	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1210
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-003

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	170,000	170	
74-93-1	Methyl Mercaptan	640	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1331
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-004

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	160,000	170	
74-93-1	Methyl Mercaptan	540	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1450
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-005

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	170,000	170	
74-93-1	Methyl Mercaptan	560	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS 1510
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-006

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	130,000	170	
74-93-1	Methyl Mercaptan	14,000	240	
75-18-3	Dimethyl Sulfide	16,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	13,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2B-TRS 1515
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-007

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	5,000	4.2	
74-93-1	Methyl Mercaptan	200	5.9	
75-18-3	Dimethyl Sulfide	2,800	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	4,100	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1600
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-008

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	830	240	
75-18-3	Dimethyl Sulfide	360	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	710	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS 1700
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-009

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	140,000	170	
74-93-1	Methyl Mercaptan	17,000	240	
75-18-3	Dimethyl Sulfide	18,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	14,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2B-TRS 1705
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-010

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	7,100	4.2	
74-93-1	Methyl Mercaptan	540	5.9	
75-18-3	Dimethyl Sulfide	2,900	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	3,900	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS 1845
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-011

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	150,000	170	
74-93-1	Methyl Mercaptan	19,000	240	
75-18-3	Dimethyl Sulfide	18,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	16,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2B-TRS 1850
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-012

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	8,100	4.2	
74-93-1	Methyl Mercaptan	760	5.9	
75-18-3	Dimethyl Sulfide	3,000	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	4,100	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS Duplicate 1115
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-013

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	840	240	
75-18-3	Dimethyl Sulfide	310	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	680	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS Duplicate 1510
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-014

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	140,000	170	
74-93-1	Methyl Mercaptan	14,000	240	
75-18-3	Dimethyl Sulfide	16,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	17,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2B-TRS Duplicate 1515
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-015

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/24/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	3,200	4.2	
74-93-1	Methyl Mercaptan	94	5.9	
75-18-3	Dimethyl Sulfide	3,000	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	4,400	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1403
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-016

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	180,000	170	
74-93-1	Methyl Mercaptan	1,200	240	
75-18-3	Dimethyl Sulfide	400	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	840	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1630
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-017

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	160,000	170	
74-93-1	Methyl Mercaptan	1,300	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	430	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1740
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-018

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	170,000	170	
74-93-1	Methyl Mercaptan	1,300	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	250	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1845

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-019

Test Code: GC/SCD Reduced Sulfur Analysis

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Gilbert Gutierrez

Sample Type: Water

Test Notes:

Date Collected: 6/25/21

Date Received: 6/29/21

Date Analyzed: 7/1/21

Liquid Amount: 1.0 ml(s)

Purge Volume: 0.30 Liter(s)

Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	140,000	170	
74-93-1	Methyl Mercaptan	1,300	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 0817
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-020

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	790	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 0924
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-021

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	130,000	84	
74-93-1	Methyl Mercaptan	560	120	
75-18-3	Dimethyl Sulfide	170	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1030
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-022

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	150,000	84	
74-93-1	Methyl Mercaptan	710	120	
75-18-3	Dimethyl Sulfide	170	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS 1035
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-023

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	130,000	84	
74-93-1	Methyl Mercaptan	12,000	120	
75-18-3	Dimethyl Sulfide	12,000	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	11,000	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: New-Indy Catawba LLC
Client Sample ID: 2B-TRS 1040
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-024

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	3,300	4.2	
74-93-1	Methyl Mercaptan	100	5.9	
75-18-3	Dimethyl Sulfide	2,400	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	3,600	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS 1205
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-025

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	120,000	84	
74-93-1	Methyl Mercaptan	10,000	120	
75-18-3	Dimethyl Sulfide	12,000	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	9,600	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 2B-TRS 1210
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-026

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	550	0.84	
74-93-1	Methyl Mercaptan	4.8	1.2	
75-18-3	Dimethyl Sulfide	1,900	1.5	
75-15-0	Carbon Disulfide	2.0	0.93	
624-92-0	Dimethyl Disulfide	3,000	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1200
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-027

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	130,000	84	
74-93-1	Methyl Mercaptan	620	120	
75-18-3	Dimethyl Sulfide	340	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	550	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1255
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-028

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	140,000	84	
74-93-1	Methyl Mercaptan	730	120	
75-18-3	Dimethyl Sulfide	180	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 2A-TRS 1345
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-029

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/25/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	22,000	240	
75-18-3	Dimethyl Sulfide	22,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	23,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 2B-TRS 1350

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-030

Test Code: GC/SCD Reduced Sulfur Analysis

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Gilbert Gutierrez

Sample Type: Water

Test Notes:

Date Collected: 6/25/21

Date Received: 6/29/21

Date Analyzed: 7/9/21

Liquid Amount: 10 ml(s)

Purge Volume: 0.30 Liter(s)

Injection Volume(s): 0.30 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	3,500	2.8	
74-93-1	Methyl Mercaptan	260	3.9	
75-18-3	Dimethyl Sulfide	2,500	5.1	
75-15-0	Carbon Disulfide	ND	3.1	
624-92-0	Dimethyl Disulfide	4,300	3.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1010
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-031

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	90,000	42	
74-93-1	Methyl Mercaptan	1,100	59	
75-18-3	Dimethyl Sulfide	420	76	
75-15-0	Carbon Disulfide	ND	47	
624-92-0	Dimethyl Disulfide	710	58	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1125

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-032

Test Code: GC/SCD Reduced Sulfur Analysis

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Gilbert Gutierrez

Sample Type: Water

Test Notes:

Date Collected: 6/26/21

Date Received: 6/29/21

Date Analyzed: 7/9/21

Liquid Amount: 1.0 ml(s)

Purge Volume: 0.30 Liter(s)

Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result μg/L	MRL μg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	75,000	84	
74-93-1	Methyl Mercaptan	1,700	120	
75-18-3	Dimethyl Sulfide	180	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	170	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1230
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-033

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	59,000	84	
74-93-1	Methyl Mercaptan	2,000	120	
75-18-3	Dimethyl Sulfide	170	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3B-TRS 1305
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-034

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	9.4	0.84	
74-93-1	Methyl Mercaptan	7.7	1.2	
75-18-3	Dimethyl Sulfide	37	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	11	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1400
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-035

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	42,000	84	
74-93-1	Methyl Mercaptan	1,500	120	
75-18-3	Dimethyl Sulfide	150	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	170	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3B-TRS 1415
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-036

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	7.7	0.84	
74-93-1	Methyl Mercaptan	5.8	1.2	
75-18-3	Dimethyl Sulfide	42	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	15	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1445
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-037

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 1.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS #	Compound	Result μg/L	MRL μg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	37,000	84	
74-93-1	Methyl Mercaptan	1,500	120	
75-18-3	Dimethyl Sulfide	ND	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	120	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3B-TRS 1530
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-038

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/9/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	5.4	0.84	
74-93-1	Methyl Mercaptan	5.9	1.2	
75-18-3	Dimethyl Sulfide	47	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	17	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: 3A-TRS 1550
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-039

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: 6/26/21
Date Received: 6/29/21
Date Analyzed: 7/15/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	41,000	17	
74-93-1	Methyl Mercaptan	1,700	24	
75-18-3	Dimethyl Sulfide	190	30	
75-15-0	Carbon Disulfide	22	19	
624-92-0	Dimethyl Disulfide	81	23	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC
Client Sample ID: Method Blank
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P210701-MB

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/01/21
Liquid Amount: 10 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	0.84	
74-93-1	Methyl Mercaptan	ND	1.2	
75-18-3	Dimethyl Sulfide	ND	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	ND	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: Method Blank

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P210709-MB

Test Code: GC/SCD Reduced Sulfur Analysis

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Gilbert Gutierrez

Sample Type: Water

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 7/09/21

Liquid Amount: 10 ml(s)

Purge Volume: 0.30 Liter(s)

Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	0.84	
74-93-1	Methyl Mercaptan	ND	1.2	
75-18-3	Dimethyl Sulfide	ND	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	ND	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: Method Blank

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P210715-MB

Test Code: GC/SCD Reduced Sulfur Analysis

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Gilbert Gutierrez

Sample Type: Water

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 7/15/21

Liquid Amount: 10 ml(s)

Purge Volume: 0.30 Liter(s)

Injection Volume(s): 1.0 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	0.84	
74-93-1	Methyl Mercaptan	ND	1.2	
75-18-3	Dimethyl Sulfide	ND	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	ND	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

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Client: New-Indy Catawba LLC
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P210701-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/01/21
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.10 ml(s)

CAS #	Compound	Spike Amount	Result		% Recovery		ALS	RPD	RPD	Data
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance			
		ug/L	ug/L	ug/L	LCS	DLCS	Limits		Limit	Qualifier
7783-06-4	Hydrogen Sulfide	413	396	440	96	107	68-129	11	16	
74-93-1	Methyl Mercaptan	620	631	718	102	116	69-136	13	17	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: New-Indy Catawba LLC
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P210709-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/09/21
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.10 ml(s)

CAS #	Compound	Spike Amount	Result		% Recovery		ALS	RPD	RPD	Data
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance			
		ug/L	ug/L	ug/L			Limits		Limit	Qualifier
7783-06-4	Hydrogen Sulfide	413	499	430	121	104	68-129	15	16	
74-93-1	Methyl Mercaptan	620	822	703	133	113	69-136	16	17	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: New-Indy Catawba LLC
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P210715-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/15/21
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.10 ml(s)

CAS #	Compound	Spike Amount	Result		% Recovery		ALS	RPD	RPD	Data
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance			
		ug/L	ug/L	ug/L			Limits		Limit	Qualifier
7783-06-4	Hydrogen Sulfide	413	483	487	117	118	68-129	0.9	16	
74-93-1	Methyl Mercaptan	620	815	806	131	130	69-136	0.8	17	



APPENDIX H

QUALITY CONTROL DATA



APPENDIX H

EQUIPMENT CALIBRATIONS

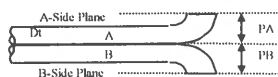
S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P172 Length 5' Probe ID.No. AUB-PR-5B

If all Criteria PASS Cp is equal to 0.84

Inspection Date 1/6/2021 Individual Conducting Inspection DDS

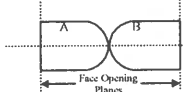
PASS/FAIL



Distance to A Plane (PA) - inches 0.488 PASS
Distance to B Plane (PB) - inches 0.488 PASS
Pitot OD (D_t) - inches 0.375

$$1.05 D_t < P < 1.5 D_t$$

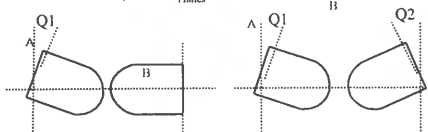
PA must Equal PB



Are Open Faces Aligned Perpendicular to the Tube Axis

☒ YES ☐ NO

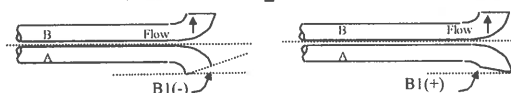
PASS



Angle of Q1 from vertical A Tube-degrees (absolute) 1 PASS

Angle of Q2 from vertical B Tube-degrees (absolute) 1 PASS

Q1 and Q2 must be $\leq 10^\circ$



Angle of B1 from vertical A Tube-degrees (absolute) 1 PASS

Angle of B1 from vertical B Tube-degrees (absolute) 0 PASS

B1 or B2 must be $\leq 5^\circ$

Y = 1 O = 1

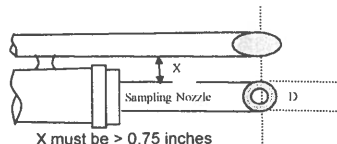
A = 0.976

Z must be ≤ 0.125 inches

Z = A sin Y = 0.0170 PASS

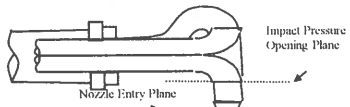
W must be ≤ 0.03125 inches

W = A sin O = 0.0170 PASS



X must be ≥ 0.75 inches

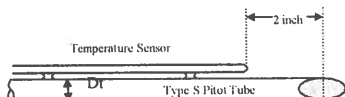
Distance between Sample Nozzle and Pitot (X) - inches N/A PASS



Impact Pressure Opening Plane is above the Nozzle Entry Plane

☒ YES ☐ NO
☐ NA

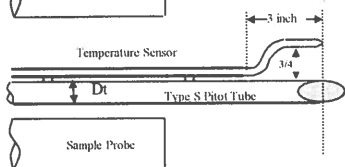
PASS



Thermocouple meets the Distance Criteria in the adjacent figure

☒ YES ☐ NO
☐ NA

PASS



Thermocouple meets the Distance Criteria in the adjacent figure

☐ YES ☐ NO
☒ NA

POSTTEST CHECK

Client NewIndy Cutawba Work Order Number 15730.001.008

Date 7-16-21 Damage Found? YES ☒ NO

Checked By SUA

Stack Temperature Sensor Calibration Data

Choose Reference Thermometer Below:

- ☐ Digital Thermometer - Omega Model CL3515R (Serial# 06000183)
- ☒ Digital Thermometer - Omega Model CL3515R (Serial# 12000230)

Thermocouple Number: AU-PR-5B Length: 5'
Date: 6-Jan-21
Ambient Temperature, °F: 57
Calibrator: DDS

Reference Point Number	Reference Temperature ° F	Thermocouple Temperature ° F	Temperature Difference %
1 - A	57	57	0.00
B	57	57	0.00
C	57	57	0.00
2 - A	38	38	0.00
B	38	38	0.00
C	38	38	0.00
3 - A	211	211	0.00
B	211	210	0.15
C	211	210	0.15

$$\text{Temp Diff (\%)} = \frac{(\text{Ref Temp, } ^\circ\text{F} + 460) - (\text{Therm Temp } ^\circ\text{F} + 460)}{\text{Ref Temp, } ^\circ\text{F} + 460} \times 100$$

Are all temperature differences less than +/- 1.5% ? YES

POSTTEST STACK TEMPERATURE SENSOR CALIBRATION DATA

Client: New Indy Contractor
Work Order Number: 15730.001.008
Date: 7-16-21
Calibrator: JJA

Ambient Temp, ° F	Reference Temp, ° F	Thermocouple Temp, ° F	Temperature Diff, %
<u>75</u>	<u>76</u>	<u>76</u>	<u>0</u>

Was a pretest temperature correction used ? yes no

Is temperature difference within +/- 1.5% yes no

If no, calculations done once with recorded values and once with corrected values _____

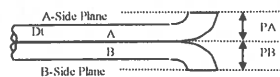
S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P77 Length 6' Probe ID.No. AUB-PR-6C

If all Criteria PASS Cp is equal to 0.84

Inspection Date 12/29/2020 Individual Conducting Inspection DDS

PASS/FAIL



Distance to A Plane (PA) - inches 0.434 PASS
Distance to B Plane (PB) - inches 0.434 PASS
Pitot OD (D_t) - inches 0.375

$$1.05 D_t < P < 1.5 D_t$$

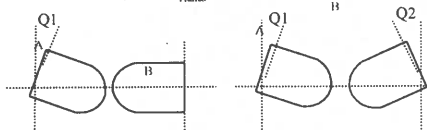
PA must Equal PB



Are Open Faces Aligned Perpendicular to the Tube Axis

☒ YES ☐ NO

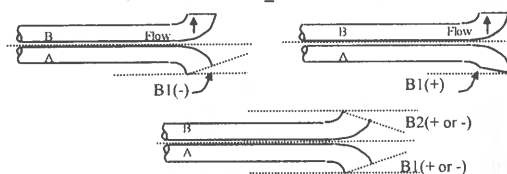
PASS



Angle of Q1 from vertical A Tube-degrees (absolute) 1 PASS

Angle of Q2 from vertical B Tube-degrees (absolute) 2 PASS

Q1 and Q2 must be $\leq 10^\circ$



Angle of B1 from vertical A Tube-degrees (absolute) 1 PASS

Angle of B1 from vertical B Tube-degrees (absolute) 1 PASS

B1 or B2 must be $\leq 5^\circ$

Y = 1 O = 1

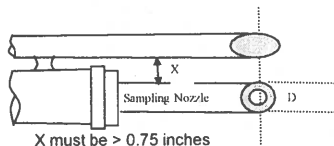
A = 0.868

Z must be ≤ 0.125 inches

Z = A sin Y = 0.0151 PASS

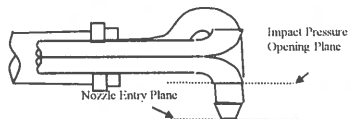
W must be ≤ 0.03125 inches

W = A sin O = 0.0151 PASS



X must be ≥ 0.75 inches

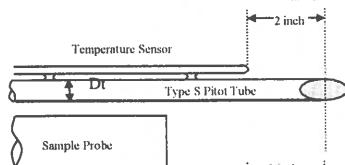
Distance between Sample Nozzle and Pitot (X) - inches N/A PASS



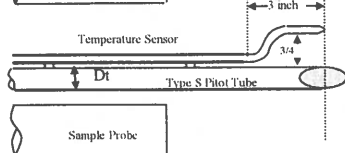
Impact Pressure Opening Plane is above the Nozzle Entry Plane

☒ YES ☐ NO
☐ NA

PASS



Thermocouple meets the Distance Criteria in the adjacent figure ☐ YES ☐ NO
☒ NA



Thermocouple meets the Distance Criteria in the adjacent figure ☒ YES ☐ NO
☐ NA

PASS

POSTTEST CHECK

Client New Indy Catawba Work Order Number 15730.001.008

Date 7-16-21 Damage Found? YES NO

Checked By JMA

Stack Temperature Sensor Calibration Data

Choose Reference Thermometer Below:

- ☐ Digital Thermometer - Omega Model CL3515R (Serial# 06000183)
- ☒ Digital Thermometer - Omega Model CL3515R (Serial# 12000230)

Thermocouple Number: AUB-PR-6C Length: 6'

Date: 29-Dec-20

Ambient Temperature, °F: 65

Calibrator: DDS

Reference Point Number	Reference Temperature °F	Thermocouple Temperature °F	Temperature Difference %
1 - A	65	65	0.00
B	65	65	0.00
C	65	65	0.00
2 - A	34	34	0.00
B	34	34	0.00
C	34	34	0.00
3 - A	210	210	0.00
B	210	210	0.00
C	210	210	0.00

$$\text{Temp Diff (\%)} = \frac{(\text{Ref Temp, } ^\circ\text{F} + 460) - (\text{Therm Temp } ^\circ\text{F} + 460)}{\text{Ref Temp, } ^\circ\text{F} + 460} \times 100$$

Are all temperature differences less than +/- 1.5% ? YES

POSTTEST STACK TEMPERATURE SENSOR CALIBRATION DATA

Client: New Indy Catering
Work Order Number: 15730.061.008
Date: 7-16-21
Calibrator: JJA

Ambient Temp, °F	Reference Temp, °F	Thermocouple Temp, °F	Temperature Diff, %
<u>76</u>	<u>76</u>	<u>76</u>	<u>0</u>

Was a pretest temperature correction used ? yes no

Is temperature difference within +/- 1.5% yes no

If no, calculations done once with recorded values and once with corrected values _____

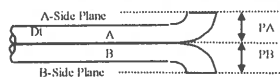
S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P320 Length 8' Probe ID.No. AUB-PR-8L

If all Criteria PASS Cp is equal to 0.84

Inspection Date 1/5/2021 Individual Conducting Inspection DDS

PASS/FAIL

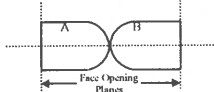


Distance to A Plane (PA) - inches 0.472
Distance to B Plane (PB) - inches 0.472
Pitot OD (D_t) - inches 0.375

PASS
PASS

1.05 D_t < P < 1.5 D_t

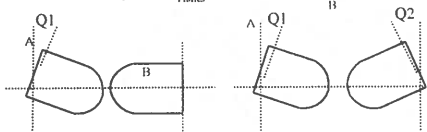
PA must Equal PB



Are Open Faces Aligned
Perpendicular to the Tube Axis

☒ YES ☐ NO

PASS



Angle of Q1 from vertical A Tube - degrees (absolute) 1

PASS

Angle of Q2 from vertical B Tube - degrees (absolute) 1

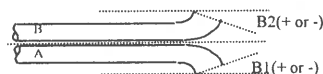
PASS

Q1 and Q2 must be ≤ 10°



Angle of B1 from vertical A Tube - degrees (absolute) 0

PASS



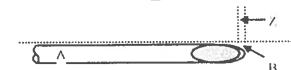
Angle of B1 from vertical B Tube - degrees (absolute) 0

PASS

B1 or B2 must be ≤ 5°

Y = 1 O = 0

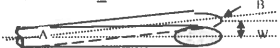
A = 0.943



Z must be ≤ 0.125 inches

Z = A sin Y = 0.0165

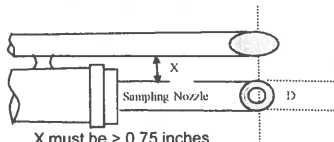
PASS



W must be ≤ 0.03125 inches

W = A sin O = 0.0000

PASS

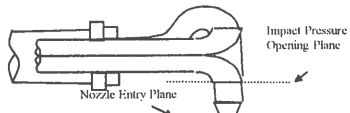


Distance between Sample
Nozzle and Pitot (X) - inches

N/A

PASS

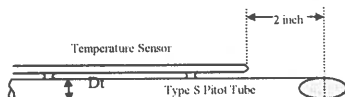
X must be ≥ 0.75 inches



Impact Pressure
Opening Plane is
above the Nozzle
Entry Plane

☒ YES ☐ NO
☐ NA

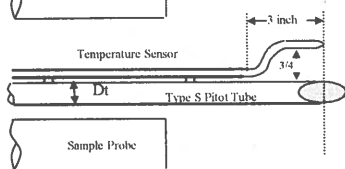
PASS



Thermocouple meets
the Distance Criteria
in the adjacent figure

☒ YES ☐ NO
☐ NA

PASS



Thermocouple meets
the Distance Criteria
in the adjacent figure

☐ YES ☐ NO
☒ NA

POSTTEST CHECK

Client New Indy Centawba

Work Order Number 15730.001.008

Date 7-16-21

Damage Found? YES

NO

Checked By JJA

Stack Temperature Sensor Calibration Data

Choose Reference Thermometer Below:

☐

Digital Thermometer - Omega Model CL3515R (Serial# 06000183)

☒

Digital Thermometer - Omega Model CL3515R (Serial# 12000230)

Thermocouple Number: AUB-PR-8L Length: 8'

Date: 5-Jan-21

Ambient Temperature, °F: 63

Calibrator: DDS

Reference Point Number	Reference Temperature ° F	Thermocouple Temperature ° F	Temperature Difference %
1 - A	63	62	0.19
B	63	62	0.19
C	63	62	0.19
2 - A	38	38	0.00
B	38	38	0.00
C	38	38	0.00
3 - A	211	211	0.00
B	211	211	0.00
C	211	211	0.00

$$\text{Temp Diff (\%)} = \frac{(\text{Ref Temp, } ^\circ\text{F} + 460) - (\text{Therm Temp } ^\circ\text{F} + 460)}{\text{Ref Temp, } ^\circ\text{F} + 460} \times 100$$

Are all temperature differences less than +/- 1.5% ? YES

POSTTEST STACK TEMPERATURE SENSOR CALIBRATION DATA

Client: New Indy Catering

Work Order Number: 15730.001.008

Date: 7-16-21

Calibrator: SJA

Ambient Temp, ° F	Reference Temp, ° F	Thermocouple Temp, ° F	Temperature Diff, %
<u>77</u>	<u>77</u>	<u>77</u>	<u>0</u>

Was a pretest temperature correction used ? yes ☒ no

Is temperature difference within +/- 1.5% ☒ yes ☐ no

If no, calculations done once with recorded values and once with corrected values _____

S - Type Pitot Tube Inspection Data Form

Pitot Tube ID No. P147

Length 6'

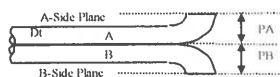
Probe ID.No.

N/A

If all Criteria PASS Cp is equal to 0.84

Inspection Date 1/4/2021 Individual Conducting Inspection DDS

PASS/FAIL



Distance to A Plane (PA) - inches 0.448
Distance to B Plane (PB) - inches 0.448
Pitot OD (D_t) - inches 0.375

PASS
PASS

$$1.05 D_t < P < 1.5 D_t$$

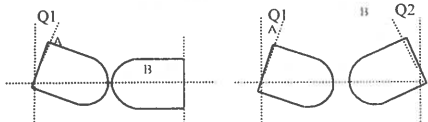
PA must Equal PB



Are Open Faces Aligned
Perpendicular to the Tube Axis

☒ YES ☐ NO

PASS



Angle of Q1 from vertical A Tube-
degrees (absolute)

1

PASS

Angle of Q2 from vertical B Tube-
degrees (absolute)

1

PASS

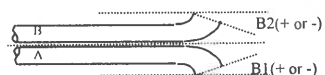
Q1 and Q2 must be $\leq 10^\circ$



Angle of B1 from
vertical A Tube-
degrees (absolute)

1

PASS



Angle of B1 from
vertical B Tube-
degrees (absolute)

1

PASS

B1 or B2 must be $\leq 5^\circ$

Y = 1

O = 1

A = 0.816



Z must be ≤ 0.125 inches

$$Z = A \sin Y =$$

0.0156

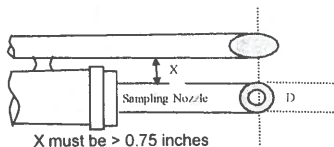
PASS

W must be ≤ 0.03125 inches

$$W = A \sin O =$$

0.0156

PASS

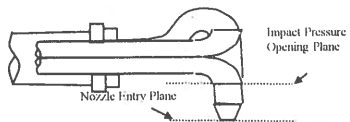


Distance between Sample
Nozzle and Pitot (X) - inches

N/A

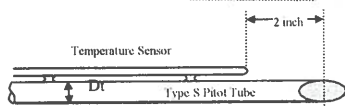
PASS

X must be ≥ 0.75 inches



Impact Pressure
Opening Plane is
above the Nozzle
Entry Plane

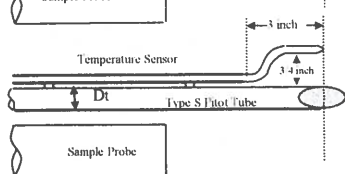
☐ YES ☐ NO
☒ NA



Thermocouple meets
the Distance Criteria
in the adjacent figure

☒ YES ☐ NO
☐ NA

PASS



Thermocouple meets
the Distance Criteria
in the adjacent figure

☐ YES ☐ NO
☒ NA

POSTTEST CHECK

Client New Indy Catawba

Work Order Number

15730.001.008

Date 7-16-21

Damage Found?

YES

NO

Checked By

ABR/TJA

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



- 1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
- 2) Record barometric pressure before and after calibration procedure.
- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
- 4) Record readings in colored boxes below, other columns are automatically calculated.

DATE: 6-May-2021	METER SERIAL #: 1557659	BAROMETRIC PRESSURE (in Hg):	INITIAL: 29.41	FINAL: 29.44	AVG (P _{bar}): 29.43	Barometer ID: 200567181
METER PART #: AO10	CRITICAL ORIFICE SET SERIAL #: 1331s & 1825	Calibrated by:	LoF			

ORIFICE #	RUN #	K'	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)		AMBIENT P°	DGM P°		Avg DGM F° T _m	ELAPSED TIME (MIN)	DGM ΔH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	(4) ΔH _Θ
				INITIAL	FINAL		INITIAL	FINAL							
8	1	0.2300	21	610.700	622.158	65	65	67	66	38	0.26	11.321	11.227	0.992	1.657
12	2	0.3326	23	711.400	724.636	69	70	71	71	30	0.54	12.976	12.769	0.984	1.646
16	3	0.4379	22	698.255	711.015	68	69	69	69	22	0.97	12.558	12.34	0.983	1.711
19	4	0.5162	21	686.356	697.885	67	69	69	69	17	1.40	11.359	11.251	0.991	1.778
25	5	0.6846	19	650.247	685.402	67	69	69	69	39	2.50	34.730	34.233	0.986	1.815
31	6	0.8304	17	624.604	649.402	66	67	69	68	23	3.60	24.612	24.511	0.996	1.786
												AVG =		0.988	1.732

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

$$(1) \quad V_m(\text{std}) = K_1 V_m \frac{P_{\text{bar}} + (\Delta H / 13.6)}{T_m} \quad \text{Individual } Y\text{'s } 0.2 \text{ from average?} \quad \text{PASS}$$

$$\text{Individual } \Delta H_{\Theta} \text{ values } 0.15 \text{ from average?} \quad \text{PASS}$$

$$\text{Average } Y \text{ value } \pm 0.02 \text{ of } 1.000? \quad \text{PASS}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

$$K_1 = 17.64 \text{ }^{\circ}\text{R/in. Hg (English), } 0.3858 \text{ }^{\circ}\text{K/mm Hg (Metric)}$$

$$T_m = \text{Absolute DGM avg. temperature (}^{\circ}\text{R - English, }^{\circ}\text{K - Metric)}$$

$$(2) \quad V_{cr}(\text{std}) = K' \sqrt{\frac{P_{\text{bar}} \theta}{T_{\text{amb}}}} \quad \text{Volume of gas sample passed through the critical orifice, corrected to standard conditions}$$

$$T_{\text{amb}} = \text{Absolute ambient temperature (}^{\circ}\text{R - English, }^{\circ}\text{K - Metric)}$$

$$K' = \text{Average } K' \text{ factor from Critical Orifice Calibration}$$

$$(3) \quad Y = \frac{V_{cr}(\text{std})}{V_m(\text{std})} \quad \text{DGM calibration factor}$$

$$(4) \quad \Delta H_{\Theta} = \frac{\Delta H \cdot 0.0319 \cdot T_m \cdot \theta^2}{P_{\text{bar}} \cdot Y^2 \cdot V_m^2}$$

Next Calibration Due By: **5/6/2022**

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



- 1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
- 2) Record barometric pressure before and after calibration procedure.
- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
- 4) Record readings in colored boxes below, other columns are automatically calculated.

DATE	4-May-2021	METER SERIAL #	6842580	BAROMETRIC PRESSURE (in Hg)	29.27	INITIAL	29.21	FINAL	29.24	AVG (P _{bar})	29.24	Barometer ID	200667181
METER PART #	AO23	CRITICAL ORIFICE SET SERIAL #	1331s & 1825	Calibrated by:	LoF								

ORIFICE #	RUN #	K FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)		AMBIENT F°	DGM F°		Avg DGM F° T _m	ELAPSED TIME (MIN) θ	DGM ΔH (in H ₂ O)		(1) V _m (STD)	(2) V _c (STD)	(3) Y	(4) ΔH _Θ
				INITIAL	FINAL		INITIAL	FINAL								

8	1	0.2300	24	936.000	945.384	79	79	80	80	31	0.26	8.983	8.983	1.000	1.669
12	2	0.3326	21	970.300	976.463	82	83	83	83	14	0.57	5.866	5.85	0.997	1.751
16	3	0.4379	21	978.531	984.290	83	83	84	84	10	1.03	5.483	5.496	1.002	1.831
19	4	0.5162	20	919.000	935.661	77	78	79	79	25	1.40	16.024	16.288	1.016	1.791
25	5	0.6846	17	963.500	969.840	82	82	83	83	7	2.60	6.071	6.021	0.992	1.906
31	6	0.8304	16	948.400	959.124	81	81	82	82	10	3.70	10.316	10.442	1.012	1.854

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_c (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

$$\begin{aligned}
 (1) \quad V_m (\text{std}) &= K_1 V_m \frac{P_{\text{bar}} + (\Delta H / 13.6)}{T_m} = \text{Net volume of gas sample passed through DGM, corrected to standard conditions} \\
 (2) \quad V_c (\text{std}) &= K' \sqrt{\frac{P_{\text{bar}} \theta}{T_{\text{amb}}}} = \text{Volume of gas sample passed through the critical orifice, corrected to standard conditions} \\
 (3) \quad Y &= \frac{V_c (\text{std})}{V_m (\text{std})} = \text{DGM calibration factor} \\
 (4) \quad \Delta H_{\Theta} &= \frac{\Delta H 0.0319 T_m \Theta^2}{P_{\text{bar}} Y^2 V_m^2}
 \end{aligned}$$

$K_1 = 17.64 \text{ } ^\circ\text{R/in. Hg (English), } 0.3858 \text{ } ^\circ\text{K/mm Hg (Metric)}$
 $T_m = \text{Absolute DGM avg. temperature (} ^\circ\text{R - English, } ^\circ\text{K - Metric)}$
 $T_{\text{amb}} = \text{Absolute ambient temperature (} ^\circ\text{R - English, } ^\circ\text{K - Metric)}$
 $K' = \text{Average K' factor from Critical Orifice Calibration}$

Individual Y's 0.2 from average? **PASS**
 Individual ΔH_Θ values 0.15 from average? **PASS**
 Average Y value +/- 0.2 of 1.000? **PASS**

Next Calibration Due By: 5/4/2022

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



- 1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
- 2) Record barometric pressure before and after calibration procedure.
- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet
- 4) Record readings in colored boxes below, other columns are automatically calculated.

DATE	14-May-2021	METER SERIAL #	9717.61	METER ID	200667181
METER PART #	AO25	CRITICAL ORIFICE SET SERIAL #	1331s & 1825	INITIAL	29.59
				FINAL	29.59
				AVG (P _{bar})	29.59
				Barometer ID	200667181

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)		AMBIENT F°	DGM F°		ELAPSED TIME (MIN)	DGM ΔH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	(4) ΔH _Θ
				INITIAL	FINAL		INITIAL	FINAL						

8	1	0.2300	23	929.100	937.472	69	70	71	28	0.30	8.248	8.288	1.005	1.900
12	2	0.3326	21	937.711	946.387	70	71	71	20	0.64	8.547	8.552	1.001	1.943
16	3	0.4379	21	972.140	989.873	71	73	74	31	1.20	17.412	17.437	1.001	2.102
19	4	0.5162	19	913.500	928.906	68	68	69	23	1.60	15.285	15.293	1.001	2.028
25	5	0.6846	17	962.902	971.830	71	72	73	10	2.95	8.821	8.793	0.997	2.137
31	6	0.8304	15	947.100	962.183	71	72	72	14	4.40	14.969	14.933	0.998	2.183
											AVG =		1.000	2.049

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

$$(1) V_m (std) = K_1 V_m \frac{P_{bar} + (\Delta H / 13.6)}{T_m} = \text{Net volume of gas sample passed through DGM, corrected to standard conditions}$$

$$(2) V_{cr} (std) = K' \sqrt{\frac{P_{bar} \theta}{T_{amb}}} = \text{Volume of gas sample passed through the critical orifice, corrected to standard conditions}$$

$$(3) Y = \frac{V_{cr} (std)}{V_m (std)} = \text{DGM calibration factor}$$

$$(4) \Delta H_{\Theta} = \frac{\Delta H \cdot 0.0319 \cdot T_m \cdot \theta^2}{P_{bar} \cdot Y^2 \cdot V_m^2}$$

Individual Y's .02 from average? **PASS**

Individual ΔH_Θ values 0.15 from average? **PASS**

Average Y value +/- .02 of 1.000? **PASS**

K₁ = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

Next Calibration Due By: 5/14/2022



CALIBRATION GAS CERTIFICATES

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI80E15A0138	Reference Number:	122-402016392-1
Cylinder Number:	XC013544B	Cylinder Volume:	150.9 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 01, 2021

Expiration Date: Feb 01, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	10.16 %	G1	+/- 0.6% NIST Traceable	02/01/2021
OXYGEN	10.00 %	10.14 %	G1	+/- 0.7% NIST Traceable	02/01/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060638	CC414571	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025
NTRM	10010616	K014963	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Apr 19, 2022

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VA-5001 CO2 BF89GV17	Nondispersive Infrared (NDIR)	Jan 06, 2021
Horiba MPA510 O2 41499150042	Paramagnetic	Jan 07, 2021

Triad Data Available Upon Request



Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E03NI60E15A0286 Reference Number: 122-402008217-1
Cylinder Number: CC275468 Cylinder Volume: 159.6 CF
Laboratory: 124 - Durham (SAP) - NC Cylinder Pressure: 2015 PSIG
PGVP Number: B22021 Valve Outlet: 590
Gas Code: CO2,O2,BALN Certification Date: Jan 22, 2021

Expiration Date: Jan 22, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	20.00 %	20.27 %	G1	+/- 0.6% NIST Traceable	01/22/2021
OXYGEN	20.00 %	20.24 %	G1	+/- 0.9% NIST Traceable	01/22/2021
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	08010202	1D003076	23.20 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VA-5001 CO2 BF89GV17	Nondispersive Infrared (NDIR)	Jan 06, 2021
Horiba MPA510 O2 41499150042	Paramagnetic	Jan 07, 2021

Triad Data Available Upon Request



CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI80E15A0138	Reference Number:	122-402016392-1
Cylinder Number:	SG9168283BAL	Cylinder Volume:	150.9 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 01, 2021

Expiration Date: Feb 01, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	10.16 %	G1	+/- 0.6% NIST Traceable	02/01/2021
OXYGEN	10.00 %	10.12 %	G1	+/- 0.5% NIST Traceable	02/01/2021
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060638	CC414571	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025
NTRM	10010616	K014963	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Apr 19, 2022

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VA-5001 CO2 BF89GV17	Nondispersive Infrared (NDIR)	Jan 06, 2021
Horiba MPA510 O2 41499150042	Paramagnetic	Jan 07, 2021

Triad Data Available Upon Request



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Approved for Release



Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI60E15A0286	Reference Number:	122-401761927-1
Cylinder Number:	CC454190	Cylinder Volume:	159.6 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Mar 16, 2020

Expiration Date: Mar 16, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	20.00 %	20.41 %	G1	+/- 0.7% NIST Traceable	03/16/2020
OXYGEN	20.00 %	19.46 %	G1	+/- 0.5% NIST Traceable	03/16/2020
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	08010202	1D003076	23.20 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Mar 05, 2020
Horiba MPA510 O2 41499150042	Paramagnetic	Mar 05, 2020

Triad Data Available Upon Request



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CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0016	Reference Number:	122-401319824-1
Cylinder Number:	CC234516	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	660
Gas Code:	SO2,BALN	Certification Date:	Oct 15, 2018

Expiration Date: Oct 15, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
SULFUR DIOXIDE	250.0 PPM	242.3 PPM	G1	+/- 0.9% NIST Traceable	10/08/2018, 10/15/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	15060654	CC450608	248.1 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.6%	Dec 17, 2020

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 SO2	FTIR	Sep 22, 2018

Triad Data Available Upon Request



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CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0259	Reference Number:	122-401777520-1
Cylinder Number:	EB0108003	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	660
Gas Code:	SO2,BALN	Certification Date:	Apr 06, 2020

Expiration Date: Apr 06, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
SULFUR DIOXIDE	450.0 PPM	457.9 PPM	G1	+/- 0.8% NIST Traceable	03/30/2020, 04/06/2020
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801549 SO2	FTIR	Apr 02, 2020

Triad Data Available Upon Request



CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0678	Reference Number:	122-402048722-1
Cylinder Number:	CC416806	Cylinder Volume:	144.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	330
Gas Code:	H2S,BALN	Certification Date:	Mar 10, 2021

Expiration Date: Mar 10, 2024

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
HYDROGEN SULFIDE	7.000 PPM	7.257 PPM	G1	+/- 1.4% NIST Traceable	03/03/2021, 03/10/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	122401645168101	CC163645	10.10 PPM HYDROGEN SULFIDE/NITROGEN	+/- 0.80	Jan 23, 2023
RGM	12332	CC183693	10.07 PPM HYDROGEN SULFIDE/NITROGEN	+/- 0.8%	Dec 18, 2017

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Applied Analytics OMA-406 AA210266	Ultraviolet	Mar 03, 2021

Triad Data Available Upon Request



Signature on file

Approved for Release



APPENDIX H

PERMEATION DEVICE CERTIFICATES

DYNACAL® PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: T-51828

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Hydrogen Sulfide (7783-06-4)
Part Number: 147-543-0110-C50
Device Type: Dynacal Wafer Geometry: 40T3
Permeation Rate: 482.97 ng/min Temperature: 50 C
True Accuracy: +/- 1.53 % Max Allowed Accuracy: +/- 5.00 %
Certification Method: Gravimetric Order No: 132578
Customer: WESTON SOLUTIONS, INC.
Note: Empty weight 20.41 g.

Approved By: _____

A handwritten signature in black ink, appearing to read 'J. Miller', written over a horizontal line.

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL® PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 33-53274

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Methyl Mercaptan 74-93-1
Part Number: 187-040-6000-C50
Device Type: Dynacal Tube Length: 4.00
Permeation Rate: 716.41 ng/min Temperature: 50 C
True Accuracy: +/- 1.50 % Max Allowed Accuracy: +/- 2.00 %
Certification Method: Gravimetric Order No: 132578
Customer: WESTON SOLUTIONS, INC.
Note: Empty weight 10.9 g.

Approved By: _____

A handwritten signature in black ink, appearing to read 'J. Miller', written over a horizontal line.

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL[®] PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL[®] PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-53332

Certification Date: Jan 26, 2021 Certificate Expires: Jan 26, 2022
Chemical: Dimethyl Sulfide 75-18-3
Part Number: 187-013-6200-89-C50
Device Type: Dynacal Tube Length: 1.30
Permeation Rate: 1197.35 ng/min Temperature: 50 C
True Accuracy: +/- 1.26 % Max Allowed Accuracy: +/- 2.00 %
Certification Method: Gravimetric Order No: 132578
Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 15.0g

Approved By: _____

A handwritten signature in black ink, appearing to read 'J. Miller', written over a horizontal line.

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL® PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-53266

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Dimethyl Disulfide 624-92-0
Part Number: 107-200-6301-C50S
Device Type: Dynacal Tube Length: 20.00
Permeation Rate: 917.53 ng/min Temperature: 50 C
True Accuracy: +/- 1.85 % Max Allowed Accuracy: +/- 2.00 %
Certification Method: Gravimetric Order No: 132578
Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 15.5 g.

Approved By: _____

A handwritten signature in black ink, appearing to read 'J. Miller', written over a horizontal line.

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL® PERMEATION DEVICE CERTIFICATE

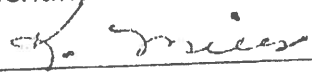


26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: T-51831

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Hydrogen Sulfide (7783-06-4)
Part Number: 147-543-0110-C50
Device Type: Dynacal Wafer Geometry: 40T3
Permeation Rate: 642.30 ng/min Temperature: 50 C
True Accuracy: +/- 4.23 % Max Allowed Accuracy: +/- 5.00 %
Certification Method: Gravimetric Order No: 132575
Customer: WESTON SOLUTIONS, INC.
Note: Empty weight 20.32 g. chemical life for continuous use expires
on 12/16/2021.

Approved By: 

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.0 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL® PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 33-50536

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Methyl Mercaptan 74-93-1
Part Number: 187-040-6000-C50
Device Type: Dynacal Tube Length: 4.00
Permeation Rate: 900.58 ng/mln Temperature: 50 C
True Accuracy: +/- 1.93 % Max Allowed Accuracy: +/- 2.00 %
Certification Method: Gravimetric Order No: 132575
Customer: WESTON SOLUTIONS, INC.
Note: Empty weight 10.9 g.

Approved By: 

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL® PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-50725

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Dimethyl Sulfide 75-18-3
Part Number: 187-013-6200-89-C50
Device Type: Dynacal Tube Length: 1.30
Permeation Rate: 758.14 ng/min Temperature: 50 C
True Accuracy: +/- 1.42 % Max Allowed Accuracy: +/- 2.00 %
Certification Method: Gravimetric Order No: 132575
Customer: WESTON SOLUTIONS, INC.
Note: Empty weight 15.0 g.

Approved By: _____

A handwritten signature in cursive script, appearing to read 'J. Jones', written over a horizontal line.

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

DYNACAL® PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-53405

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022
Chemical: Dimethyl Disulfide 624-92-0
Part Number: PD-6301-C50
Device Type: Dynacal Tube Length: 20.00
Permeation Rate: 895.19 ng/mln Temperature: 50 C
True Accuracy: +/- 1.44 % Max Allowed Accuracy: +/- 2.00 %
Certification Method: Gravimetric Order No: 132575
Customer: WESTON SOLUTIONS, INC.
Note: Empty weight 15.5 g.

Approved By: 

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.



CYCLONIC FLOW CHECKS



APPENDIX H

PULP DRYER

Determination of Stack Gas Velocity - Method 2

Client New Indy Source Pulp Dryer Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 19.63
Operator ATC Date 6/26/21 Pitot/Thermo ID P560 / A060

Run Number
Time
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

<u>Prelim cyclone</u>		
<u>11:35</u>		

Cyclonic Flow Determination		Leak Check good ?		Leak Check good ?		Leak Check good ?	
		Y / N		Y / N		Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
<u>0</u>	<u>AR 80</u>	<u>A</u>	<u>1</u>				
<u>.02</u>	<u>5</u>		<u>2</u>				
<u>.02</u>	<u>5</u>		<u>3</u>				
<u>.02</u>	<u>5</u>		<u>4</u>				
<u>.03</u>	<u>5</u>		<u>5</u>				
<u>.05</u>	<u>10</u>		<u>6</u>				
<u>.08</u>	<u>20</u>		<u>7</u>				
<u>.08</u>	<u>20</u>		<u>8</u>				
<u>0</u>	<u>0</u>	<u>B</u>	<u>1</u>				
<u>0</u>	<u>0</u>		<u>2</u>				
<u>.03</u>	<u>3</u>		<u>3</u>				
<u>.03</u>	<u>3</u>		<u>4</u>				
<u>.04</u>	<u>5</u>		<u>5</u>				
<u>.05</u>	<u>10</u>		<u>6</u>				
<u>.07</u>	<u>15</u>		<u>7</u>				
<u>.04</u>	<u>15</u>		<u>8</u>				
Avg Angle	<u>4.83</u>	Avg Δp & Temp					
		Avg √Δp					
		Average gas stream velocity, ft/sec.					
		Vol. flow rate at actual conditions, acf/min					
		Vol. flow rate at standard conditions, dscf/min					

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:
M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute (°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments



NO. 3 PAPER MACHINE

Determination of Stack Gas Velocity - Method 2

Client New Ind Source No.1 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 13.64
Operator VD/LF Date 6/15/21 Pitot/Thermo ID P147/M-1

Run Number Prelim
Time 1221
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.70	17	A	1						
.50	14		2						
.60	10		3						
.26	7		4						
.66	15		5						
.58	22		6						
.26	20		7						
.18	37		8						
.80	23	B	1						
.78	21		2						
.50	16		3						
.18	5		4						
.44	15		5						
.38	11		6						
.10	5		7						
.06	5		8						
Avg Angle	15.2	Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments

Determination of Stack Gas Velocity - Method 2

Client	New Indy	Source	No. 2 Hood Exhaust	Pitot Coeff (C _p)	0.84
Location/Plant	Catawba, SC	W.O. Number	15730.001.008	Stack Area (A _s), ft ²	17.03
Operator	JD/LF	Date	6/15/21	Pitot/Thermo ID	P147/M1

Run Number	Prelim
Time	1157
Barometric Press (P _{bar}), in Hg*	
Static Press (P _g), in H ₂ O	
Source Moisture (B _{ws}), %	
O ₂ , %	
CO ₂ , %	

Cyclonic Flow Determination		Leak Check good ?		Leak Check good ?		Leak Check good ?	
Angle yielding Δp = 0		Y / N		Y / N		Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.72	13	A	1				
.78	13		2				
.92	13		3				
.96	16		4				
.40	10		5				
.92	25		6				
.46	17		7				
.60	20		8				
1.1	25	B	1				
1.1	22		2				
1.1	15		3				
.57	8		4				
.62	10		5				
.24	10		6				
.12	5		7				
.04	2		8				
Avg Angle	14	Avg Δp & Temp					
		Avg √Δp					
		Average gas stream velocity, ft/sec.					
		Vol. flow rate at actual conditions, acf/min					
		Vol. flow rate at standard conditions, dscf/min					

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{std} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:
M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{std} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments

Determination of Stack Gas Velocity - Method 2

Client New Indy Source No. 3 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 17.03
Operator VD/LF Date 6/15/21 Pitot/Thermo ID P147/M-1

Run Number Prelim
Time 1105
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? <u>Y</u> / N		Leak Check good ? Y / <u>N</u>		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.64	10	A	1						
.62	8		2						
.60	8		3						
.72	12		4						
.32	11		5						
.96	26		6						
.98	26		7						
.70	28		8						
.76	12	B	1						
.66	10		2						
.56	7		3						
.40	5		4						
.96	9		5						
1.1	22-24		6						
.86	24		7						
.59	25		8						
Avg Angle	15.3	Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments



Determination of Stack Gas Velocity - Method 2

Client New Indy Source No. 4 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 17.18
Operator JD/LF Date 6/15/21 Pitot/Thermo ID P147/M-1

Run Number Prelim
Time 1041
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.38	15	A	1						
.32	17		2						
.20	15		3						
.08	7		4						
.22	12		5						
.28	17		6						
.16	13		7						
.12	14		8						
.60	27	B	1						
.56	25		2						
.40	20		3						
.20	3		4						
.40	16		5						
.22	13		6						
.02	8		7						
.02	8		8						
Avg Angle		Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments



Determination of Stack Gas Velocity - Method 2

Client New Indy Source No. 6 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 14.75
Operator JD / LF Date 6/15/21 Pitot/Thermo ID P147 / M-1

Run Number Prelim
Time 1014
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? <u>Y / N</u>		Leak Check good ? <u>Y / N</u>		Leak Check good ? <u>Y / N</u>	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
1.2	34	A	1						
1.8	34		2						
1.2	28		3						
.30	10		4						
.66	9		5						
.50	10		6						
.10	8		7						
.10	8		8						
1.1	21	B	1						
1.1	18		2						
1.0	18		3						
.80	10		4						
.74	10		5						
.46	15		6						
.14	8		7						
.12	8		8						
Avg Angle		Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{std} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

*Barometric Pressure is at port elevation

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{std} = Volumetric flow rate of dry stack gas at standard conditions,

Comments

Determination of Stack Gas Velocity - Method 2

Client New Indy Source No. 7 Head Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 23.76
Operator VD/LF Date 6/15/21 Pitot/Thermo ID P147/M-1

Run Number Prelim
Time 1001
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? <u>Y</u> N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.90	15	A	1						
.88	14		2						
.78	12		3						
.64	12		4						
.50	10		5						
.50	13		6						
.12	10		7						
0	0		8						
.68	14	B	1						
1.0	18		2						
.92	18		3						
.68	10		4						
.44	10		5						
.22	0		6						
.14	6		7						
0	0		8						
Avg Angle		Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

*Barometric Pressure is at port elevation

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.

T_{s(abs)} = Source Temperature, absolute(°R)

P_s = Absolute stack static pressure, inches Hg.

V_s = Average gas stream velocity, ft/sec.

Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min

Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

Comments



Determination of Stack Gas Velocity - Method 2

Client	New Indy	Source	No. 8 Hood Exhaust	Pitot Coeff (C _p)	0.84
Location/Plant	Catawba, SC	W.O. Number	15730.001.008	Stack Area (A _s), ft ²	23.70
Operator	JD/LF	Date	6/15/21	Pitot/Thermo ID	P147/M-1

Run Number	Prelim
Time	945
Barometric Press (P _{bar}), in Hg*	
Static Press (P _g), in H ₂ O	
Source Moisture (B _{ws}), %	
O ₂ , %	
CO ₂ , %	

Cyclonic Flow Determination		Leak Check good ?		Leak Check good ?		Leak Check good ?	
		Y / N		Y / N		Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
1.1	15	A	1				
1.1	15		2				
1.1	15		3				
.98	14		4				
.68	8		5				
.50	9		6				
.16	10		7				
.14	10		8				
.96	13	B	1				
1.1	18		2				
.96	20		3				
.48	11		4				
.30	7		5				
.24	7		6				
.16	3		7				
.10	5		8				
Avg Angle	11.3	Avg Δp & Temp					
		Avg √Δp					
		Average gas stream velocity, ft/sec.					
		Vol. flow rate at actual conditions, acf/min					
		Vol. flow rate at standard conditions, dscf/min					

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments

Determination of Stack Gas Velocity - Method 2

Client New Indy Source o. 1 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 13.64
Operator BCA/BE Date 6/25/21 Pitot/Thermo ID P77

Run Number Prelim
Time 7:30-7:45
Barometric Press (P_{bar}), in Hg* 29.68
Static Press (P_g), in H₂O -.68
Source Moisture (B_{ws}), % ~20
O₂, % 20.9
CO₂, % 8

Cyclonic Flow Determination		Traverse Location		Leak Check good ? <u>Y/N</u>		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.40	11	A	1		173				
.26	13		2		173				
.19	6		3		174				
.14	5		4		173				
.07	15		5		174				
.07	4		6		174				
.02	4		7		173				
.01	2		8		169				
.70	18	B	1		171				
.58	14		2		174				
.41	14		3		174				
.15	11		4		174				
.03	16		5		174				
.03	19		6		174				
.01	6		7		173				
.03	2		8		168				
Avg Angle		Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:
M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments _____

Determination of Stack Gas Velocity - Method 2

Client New Indy Source 0. Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 17.03
Operator BEA/BE Date 6/24/21 Pitot/Thermo ID 777

Run Number	<u>Prelim</u>		
Time	<u>18:30 - 18:50</u>		
Barometric Press (P _{bar}), in Hg*	<u>29.58</u>		
Static Press (P _g), in H ₂ O			
Source Moisture (B _{ws}), %			
O ₂ , %			
CO ₂ , %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.55	6	A	1		186				
.60	8		2		186				
.35	2		3		185				
.57	8		4		180				
.30	4		5		180				
.85	16		6		176				
.88	26		7		173				
.77	26		8		180				
.74	14	B	1		180				
.52	8		2		181				
.56	8		3		181				
.28	4		4		183				
.28	4		5		183				
.83	20		6		184				
.92	24		7		182				
.90	28		8		180				
Avg Angle		Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute (°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments _____

Determination of Stack Gas Velocity - Method 2

Client New Indy Source o. 3 Hood Exhaust 24 Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² _____
Operator BEA/BE Date 6/25/21 Pitot/T. erno ID P77

Run Number _____
Time 7:45-7:55
Barometric Press (P_{bar}), in Hg* 29.68
Static Press (P_g), in H₂O _____
Source Moisture (B_{ws}), % _____
O₂, % _____
CO₂, % _____

Cyclonic Flow Determination		Traverse Location		Leak Check good ? <u>Y/N</u>		Leak Check good ? <u>Y/N</u>		Leak Check good ? <u>Y/N</u>	
Δp at 0°	Angle yielding $\Delta p = 0$	Port	Point	Δp , in H ₂ O	Source Temperature (T_s), °F	Δp , in H ₂ O	Source Temperature (T_s), °F	Δp , in H ₂ O	Source Temperature (T_s), °F
1.0	28	A	1		190				
1.3	30		2		191				
.99	25		3		191				
.70	12		4		191				
.53	14		5		192				
.47	8		6		193				
.09	7		7		190				
.06	5		8		191				
1.1	20	B	1		188				
.56	15		2		187				
.69	8		3		190				
.53	13		4		191				
.50	14		5		192				
.12	6		6		191				
.18	7		7		190				
.10	5		8		190				
Avg Angle		Avg Δp & Temp							
		Avg $\sqrt{\Delta p}$							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

*Barometric Pressure is at port elevation

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
 M_s = Wet molecular weight source gas, lb/lb-mole.
 $T_{s(abs)}$ = Source Temperature, absolute (°R)
 P_s = Absolute stack static pressure, inches Hg.
 V_s = Average gas stream velocity, ft/sec.
 Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
 Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

Comments _____

Determination of Stack Gas Velocity - Method 2

Client New Indy Source o. 4 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 17.18
Operator BEA/BE Date 6/25/21 Pitot/Thermo ID PTT

Run Number Prelim
Time 11:05-11:20
Barometric Press (P_{bar}), in Hg* 29.68
Static Press (P_g), in H₂O -1.49
Source Moisture (B_{ws}), % ~20
O₂, % 20.9
CO₂, % 0

Cyclonic Flow Determination		Leak Check good ?		Leak Check good ?		Leak Check good ?	
		Y / N		Y / N		Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.32	14	A	1		192		
.33	16		2		193		
.19	13		3		192		
.08	6		4		192		
.23	12		5		193		
.29	17		6		192		
.12	9		7		191		
.07	4		8		190		
.51	23	B	1		190		
.48	20		2		192		
.47	22		3		193		
.16	11		4		193		
.23	12		5		194		
.20	10		6		192		
.02	6		7		191		
.08	10		8		189		
Avg Angle		Avg Δp & Temp					
		Avg √Δp					
		Average gas stream velocity, ft/sec.					
		Vol. flow rate at actual conditions, acf/min					
		Vol. flow rate at standard conditions, dscf/min					

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:
M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute (°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wac/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions.

*Barometric Pressure is at port elevation

Comments _____



Determination of Stack Gas Velocity - Method 2

Client New Indy Source o. 7 Hood Exhaust Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 23.76
Operator BOH/BE Date 6/24/21 Pitot/Thermo ID P77

Run Number	<u>Prelim</u>		
Time	<u>8:05 - 8:25</u>		
Barometric Press (P_{bar}), in Hg*	<u>29.68</u>		
Static Press (P_g), in H ₂ O	<u>-0.30</u>		
Source Moisture (B_{ws}), %	<u>~20</u>		
O ₂ , %	<u>20.9</u>		
CO ₂ , %	<u>0</u>		

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding $\Delta p = 0$	Port	Point	Δp , in H ₂ O	Source Temperature (T _s), °F	Δp , in H ₂ O	Source Temperature (T _s), °F	Δp , in H ₂ O	Source Temperature (T _s), °F
.02	11	A	1		188				
.05	13		2		189				
.02	10		3		189				
.01	4		4		188				
.31	8		5		187				
.16	7		6		188				
0	0		7		189				
.01	2		8		189				
.05	14	B	1		186				
.03	7		2		184				
.02	3		3		185				
.06	5		4		186				
.25	18		5		184				
.01	2		6		182				
0	0		7		181				
0	0		8		181				
Avg Angle		Avg Δp & Temp							
		Avg $\sqrt{\Delta p}$							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

*Barometric Pressure is at port elevation

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
 M_s = Wet molecular weight source gas, lb/lb-mole.
 $T_{s(abs)}$ = Source Temperature, absolute (°R)
 P_s = Absolute stack static pressure, inches Hg.
 V_s = Average gas stream velocity, ft/sec.
 Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
 Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

Comments



Determination of Stack Gas Velocity - Method 2

Client	New Indy	Source	o. 8 Hood Exhaust	Pitot Coeff (C _p)	0.84
Location/Plant	Catawba, SC	W.O. Number	15730.001.008	Stack Area (A _s), ft ²	23.76
Operator	BEA/BE	Date	6/26/21	Pitot/Thermo ID	P77

Run Number	Prelim
Time	16:45 - 16:55
Barometric Press (P _{bar}), in Hg*	29.66
Static Press (P _g), in H ₂ O	-1.71
Source Moisture (B _{ws}), %	~20
O ₂ , %	20.5
CO ₂ , %	Ø

Cyclonic Flow Determination		Leak Check good ?		Leak Check good ?		Leak Check good ?	
		Y / N		Y / N		Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
-0.07	15	A	1		186		
-0.06	13		2		181		
-0.06	17		3		186		
-0.04	14		4		186		
.08	3		5		182		
.04	4		6		180		
.03	4		7		181		
-0.01	2		8		181		
-0.09	18	B	1		186		
-0.07	16		2		186		
-0.06	14		3		180		
-0.05	16		4		184		
.14	6		5		184		
-0.09	10		6		182		
.05	9		7		181		
.04	6		8		180		
Avg Angle		Avg Δp & Temp					
		Avg √Δp					
		Average gas stream velocity, ft/sec.					
		Vol. flow rate at actual conditions, acf/min					
		Vol. flow rate at standard conditions, dscf/min					

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

*Barometric Pressure is at port elevation

where:
M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

Comments



APPENDIX H

NO. 2 AND 3 SMELT DISSOLVING TANK VENTS

Determination of Stack Gas Velocity - Method 2

Client New Indy Source SDTV Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 27.49
Operator ATR / CL Date ATR Pito/Thermo ID p320 / A025

Run Number Prelim cyclonic
Time 10:10
Barometric Press (P_{bar}), in Hg⁺ 29.40
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.04	5	A	1						
.04	5		2						
.03	4		3						
.0	3		4						
.0	2		5						
.05	6		6						
.05	6		7						
.05	7		8						
.06	6	B	1						
.05	6		2						
.04	5		3						
.03	4		4						
.03	4		5						
.05	5		6						
.06	7		7						
.06	8		8						
Avg Angle	5.18	Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

*Barometric Pressure is at port elevation

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

Comments



APPENDIX H

NO. 1 AND 2 COMBINATION BOILERS

Determination of Stack Gas Velocity - Method 2

Client New Indy Source No. 1 Combination Boiler Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 78.54
Operator ATR Date 6/23/21 Pitot/Thermo ID P172 / A010

Run Number
Time
Barometric Press (P_{bar}), in Hg*
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

prelim cyclonic		
9:36		
29.45		

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at 0°	Angle yielding $\Delta p = 0$	Port	Point	Δp , in H ₂ O	Source Temperature (T_s), °F	Δp , in H ₂ O	Source Temperature (T_s), °F	Δp , in H ₂ O	Source Temperature (T_s), °F
.08	15	A	1						
.08	12		2						
.06	10		3						
.09	14		4						
.09	10	B	1						
.08	13		2						
.06	13		3						
.09	12		4						
.07	10	C	1						
.08	12		2						
.06	10		3						
.07	10		4						
.09	13	D	1						
.08	12		2						
.07	12		3						
.08	13		4						
Avg Angle	11.9	Avg Δp & Temp							
		Avg $\sqrt{\Delta p}$							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:
 M_d = Dry molecular weight source gas, lb/lb-mole.
 M_s = Wet molecular weight source gas, lb/lb-mole.
 $T_{s(abs)}$ = Source Temperature, absolute (°R)
 P_s = Absolute stack static pressure, inches Hg.
 V_s = Average gas stream velocity, ft/sec.
 Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
 Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments _____

Determination of Stack Gas Velocity - Method 2

Client New Indy Source No. 2 Combination Boiler Pitot Coeff (C_p) 0.84
Location/Plant Catawba, SC W.O. Number 15730.001.008 Stack Area (A_s), ft² 78.54
Operator ATR Date 6/24/21 Pitot/Thermo ID P172/A010

Run Number Prelim cyclonic
Time 11:58
Barometric Press (P_{bar}), in Hg⁺ 29.65
Static Press (P_g), in H₂O
Source Moisture (B_{ws}), %
O₂, %
CO₂, %

Cyclonic Flow Determination		Traverse Location		Leak Check good ? <u>Y</u> N		Leak Check good ? Y <u>N</u>		Leak Check good ? Y <u>N</u>	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
.07	9	A	1						
.07	10		2						
.08	10		3						
.07	12		4						
.09	15	B	1						
.09	12		2						
.08	12		3						
.08	10		4						
.08	10	C	1						
.07	10		2						
.07	12		3						
.08	12		4						
.06	10	D	1						
.08	13		2						
.08	15		3						
.07	13		4						
Avg Angle <u>11.56</u>		Avg Δp & Temp							
		Avg √Δp							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$$

$$M_s = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abs)} / (P_s \times M_s))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
M_s = Wet molecular weight source gas, lb/lb-mole.
T_{s(abs)} = Source Temperature, absolute(°R)
P_s = Absolute stack static pressure, inches Hg.
V_s = Average gas stream velocity, ft/sec.
Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
Q_{sd} = Volumetric flow rate of dry stack gas at standard conditions,

*Barometric Pressure is at port elevation

Comments _____



APPENDIX H

STRATIFICATION AND RESPONSE TIME CHECKS



No. 1 COMBINATION BOILER

Client: New Indy
Location: Catawba, SC
Date: 6/23/2021

WO# 15730.001.008
Source: No. 1 Combination Boiler
Operating load: Normal

Source

Port	Point	O2	% difference from Mean	Absolute difference	CO2	% difference from Mean	Absolute difference	SO2	% difference from Mean	Absolute difference
D	1	12.55	3.8%	0.454	7.10	6.0%	0.454	264.5	2.8%	7.250
	2	12.50	3.3%	0.404	7.25	4.0%	0.304	284.0	10.4%	26.750
	3	12.25	1.3%	0.154	7.40	2.0%	0.154	281.5	9.4%	24.250
	4	12.45	2.9%	0.354	7.20	4.7%	0.354	276.5	7.5%	19.250
	5	12.10	0.0%	0.004	7.50	0.7%	0.054	263.5	2.4%	6.250
	6	12.00	0.8%	0.096	7.60	0.6%	0.046	243.0	5.5%	14.250
C	1	12.10	0.0%	0.004	7.45	1.4%	0.104	259.5	0.9%	2.250
	2	12.05	0.4%	0.046	7.65	1.3%	0.096	261.0	1.5%	3.750
	3	11.55	4.5%	0.546	8.20	8.5%	0.646	252.5	1.8%	4.750
	4	11.65	3.7%	0.446	7.95	5.2%	0.396	231.5	10.0%	25.750
	5	11.95	1.2%	0.146	7.70	1.9%	0.146	226.0	12.1%	31.250
	6	12.00	0.8%	0.096	7.65	1.3%	0.096	243.5	5.3%	13.750
Mean:		12.10			7.55			257.25		

Compliance Testing	
Results	Not Stratified per O2
Sampling Approach	Sampled at single point which most closely represented the mean

EPA Part 60 Testing	
Results	Not Stratified per O2
Sampling Approach	Sampled at 0.4m, 1.0m and 2.0m from stack wall or sampled at 16.7%, 50%, and 83.3% of duct diameter

EPA Part 75 Testing	
Results	Not Stratified per O2
Sampling Approach	Sampled at single point located no less than 1m from the stack wall and located on the same line as the traverse test

Per EPA Method 7E, a 12 point traverse was conducted to measure for stratification of the flue gas. According to Method 7E, the gas stream can be stratified, minimally stratified, or not stratified. If at each point any pollutant or diluent is determined to be less than 5% or 0.5 ppm different than the mean concentration, the source is not stratified. If at each point any pollutant or diluent is determined to be greater than 5% but less than 10% or greater than 0.5 ppm but less than 1.0 ppm different than the mean concentration, the source is minimally stratified. If at any point the pollutants and diluents are greater than 10% or 1.0 ppm different than the mean concentration, the source is stratified.

Per EPA Part 60, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 10% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 10% different than the mean concentration, the source is stratified.

Per EPA Part 75, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 5% different than the mean concentration, the source is not stratified. If at any point the pollutants are determined to be less than 3.0 ppm less than 3.0 ppm or the diluents determined to be less than 0.3% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 5%, the pollutants are greater than 3.0 ppm, or the diluents are greater than 0.3% different than the mean concentration the source is stratified.

AM

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂ mv	%	CO ₂ mv	%	SO ₂ mv	ppm
Stratification Check						
Response time - 4 minutes, timed during 1st bias						
Points Selected by Table 1-2 of EPA Method 1						
Port D Point 1 (O2 higher due to interference from open port)						
08:53	4339	13.0	2768	6.8	2406	241
08:54	4279	12.9	2789	6.9	2303	230
08:55	4339	13.0	2836	7.0	2224	223
08:56	4186	12.6	2840	7.0	2077	208
08:57	4317	13.0	2896	7.2	2030	203
08:58	4391	13.2	2798	6.9	2221	222
08:59	4518	13.6	2700	6.7	2311	231
09:00	4563	13.7	2543	6.3	2383	238
Point 2						
09:01	4490	13.5	2549	6.3	2367	237
09:02	4449	13.4	2583	6.4	2376	238
09:03	4246	12.8	2676	6.6	2389	239
09:04	4262	12.8	2848	7.0	2338	234
09:05	4234	12.7	2846	7.0	2288	229
09:06	4192	12.6	2870	7.1	2708	271
09:07	4163	12.5	2907	7.2	2808	281
09:08	4169	12.5	2949	7.3	2873	287
Point 3						
09:09	4239	12.7	2917	7.2	2776	278
09:10	4239	12.7	2866	7.1	2526	253
09:11	4099	12.3	2877	7.1	2470	247
09:12	4083	12.3	3024	7.5	2360	236
09:13	4169	12.5	3019	7.5	2334	234
09:14	4154	12.5	2930	7.2	2763	276
09:15	4071	12.2	2961	7.3	2847	285
09:16	4084	12.3	3043	7.5	2778	278
Point 4						
09:17	4145	12.5	3027	7.5	2632	263
09:18	4171	12.5	2961	7.3	2537	254
09:19	4209	12.6	2922	7.2	2590	259
09:20	4198	12.6	2880	7.1	2538	254
09:21	4139	12.4	2891	7.2	2560	256
09:22	4172	12.5	2934	7.3	2801	280
09:23	4163	12.5	2900	7.2	2873	287
09:24	4133	12.4	2906	7.2	2657	266
Point 5						
09:25	4175	12.5	2919	7.2	2406	241

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
09:26	4232	12.7	2872	7.1	2308	231
09:27	4241	12.7	2826	7.0	2273	227
09:28	4169	12.5	2822	7.0	2447	245
09:29	4091	12.3	2897	7.2	2770	277
09:30	4011	12.1	2969	7.3	2819	282
09:31	4029	12.1	3033	7.5	2821	282
09:32	4013	12.1	3034	7.5	2453	245
Port stuffer fell out						
09:33	5096	15.3	2841	7.0	1574	158
09:34	5110	15.3	2003	4.9	1594	160
09:35	4584	13.8	1940	4.8	2221	222
Point 6						
09:36	3905	11.7	2614	6.5	2642	264
09:37	3914	11.8	3145	7.8	3031	303
09:38	3956	11.9	3132	7.8	2875	288
09:39	3989	12.0	3101	7.7	2929	293
09:40	3980	12.0	3068	7.6	2649	265
09:41	4021	12.1	3087	7.6	2464	247
09:42	4013	12.1	3057	7.6	2374	238
09:43	3957	11.9	3061	7.6	2474	248
Interference from open port						
09:44	4003	12.0	3129	7.7	2424	243
09:45	4594	13.8	2963	7.3	2253	225
09:46	4365	13.1	2490	6.2	2512	251
Point 1						
09:47	4028	12.1	2787	6.9	2643	264
09:48	4021	12.1	3046	7.5	2444	245
09:49	4131	12.4	3041	7.5	2438	244
09:50	4160	12.5	2942	7.3	2344	235
09:51	4158	12.5	2894	7.2	2593	259
09:52	4204	12.6	2890	7.1	2577	258
09:53	4191	12.6	2852	7.1	2665	267
09:54	4170	12.5	2864	7.1	2615	262
Port Change						
09:55	4202	12.6	2878	7.1	2634	264
09:56	4125	12.4	2869	7.1	2415	242
09:57	4086	12.3	2946	7.3	2459	246
09:58	5619	16.9	2802	6.9	902	91
09:59	6924	20.8	294	0.7	122	13
10:00	6928	20.8	6	0.0	59	6
10:01	6932	20.8	6	0.0	40	4

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
10:02	6934	20.8	6	0.0	30	3
10:03	6937	20.8	6	0.0	23	3
10:04	6941	20.8	6	0.0	16	2
10:05	6940	20.8	6	0.0	12	2
10:06	5040	15.1	388	0.9	1610	161
Port C Point 1						
10:07	3989	12.0	2906	7.2	2393	239
10:08	4005	12.0	3070	7.6	2375	238
10:09	4016	12.1	3076	7.6	2668	267
10:10	4046	12.2	3053	7.6	2778	278
10:11	4028	12.1	3027	7.5	2772	277
10:12	4084	12.3	3027	7.5	2651	265
10:13	4050	12.2	2991	7.4	2596	260
10:14	3999	12.0	3032	7.5	2590	259
Point 2						
10:15	4016	12.1	3070	7.6	2528	253
10:16	3911	11.8	3083	7.6	2523	252
10:17	3855	11.6	3188	7.9	2826	283
10:18	3872	11.6	3255	8.1	2823	282
10:19	3884	11.7	3244	8.0	2803	280
10:20	4008	12.0	3218	8.0	2575	258
10:21	4003	12.0	3094	7.7	2638	264
10:22	4036	12.1	3083	7.6	2575	258
Point 3						
10:23	4043	12.1	3061	7.6	2489	249
10:24	4020	12.1	3046	7.5	2518	252
10:25	3931	11.8	3087	7.6	2785	279
10:26	3849	11.6	3188	7.9	2818	282
10:27	3789	11.4	3283	8.1	2757	276
10:28	3759	11.3	3351	8.3	2443	244
10:29	3839	11.5	3365	8.3	2509	251
10:30	3866	11.6	3290	8.1	2534	254
Point 4						
10:31	3886	11.7	3251	8.0	2680	268
10:32	3900	11.7	3236	8.0	2566	257
10:33	3884	11.7	3233	8.0	2871	287
10:34	3917	11.8	3228	8.0	2764	277
10:35	3995	12.0	3174	7.9	2260	226
10:36	3983	12.0	3095	7.7	1976	198
10:37	3842	11.5	3150	7.8	2298	230
10:38	3913	11.8	3272	8.1	2328	233

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 1 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **23 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
Point 5						
10:39	4002	12.0	3182	7.9	2024	203
10:40	4039	12.1	3096	7.7	1908	191
10:41	4118	12.4	3033	7.5	2372	237
10:42	4042	12.1	2973	7.4	2540	254
10:43	3981	12.0	3040	7.5	2288	229
10:44	3976	11.9	3113	7.7	2001	200
10:45	3996	12.0	3123	7.7	2186	219
10:46	3966	11.9	3104	7.7	2330	233
Point 6						
10:47	3995	12.0	3128	7.7	2014	202
10:48	4059	12.2	3089	7.6	2056	206
10:49	4040	12.1	3046	7.5	2233	223
10:50	4029	12.1	3039	7.5	2260	226
10:51	3949	11.9	3065	7.6	2304	231
10:52	4019	12.1	3118	7.7	2156	216
10:53	4007	12.0	3067	7.6	2390	239
10:54	4010	12.0	3091	7.7	2483	248
Avg	4288	12.9	2787	6.9	2323	232

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
Pulp Dyer, #3 Paper Machine,
#3 SDTVs, & #1-2 CBs
Emission Report

Client New Indy
Location/Plant Catawba, SC
Source No. 1 Combination Boiler

Operator VD
Date 21-Jun-21
W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☐ Velocity Traverse

Distance from far wall to outside of port (in.) = C	127.5
Port Depth (in.) = D	7.5
Depth of Duct, diameter (in.) = C-D	120
Area of Duct (ft ²)	78.54
Total Traverse Points	12
Total Traverse Points per Port	6

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)
Total Ports (rectangular duct only)

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	4.4	5 1/2	13
2	14.6	17 1/2	25
3	29.6	35 1/2	43
4	70.4	84 1/2	92
5	85.4	102 1/2	110
6	95.6	114 1/2	122
7			
8			
9			
10			
11			
12			

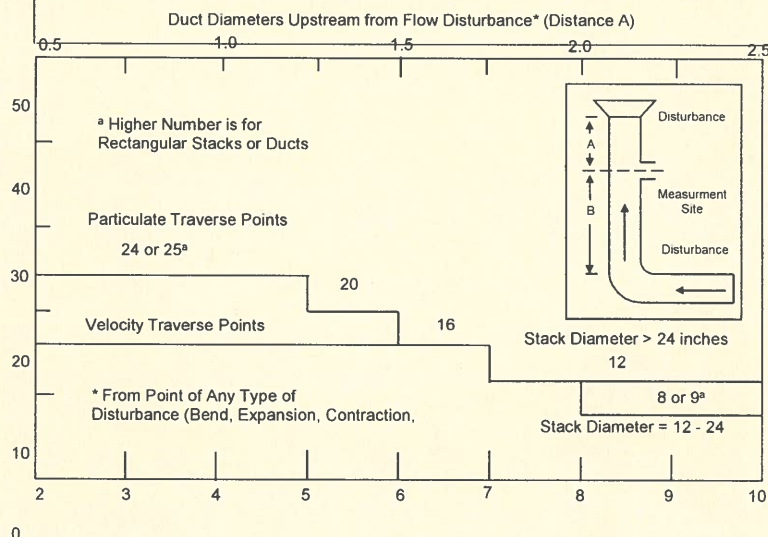
$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

		Traverse Point Location Percent of Stack - Circular											
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3				75		29.6		19.4		14.6		11.8
	4				93.3		70.4		32.3		22.6		17.7
	5						85.4		67.7		34.2		25
	6						95.6		80.6		65.8		35.6
	7								89.5		77.4		64.4
	8								96.8		85.4		75
	9										91.8		82.3
	10										97.4		88.2
	11												93.3
	12												97.9

Flow Disturbances	
Upstream - A (ft)	45.0
Downstream - B (ft)	32.0
Upstream - A (duct diameters)	4.50
Downstream - B (duct diameters)	3.20

Diagram of Stack

Stratification
check



Duct Diameters Downstream from Flow Disturbance* (Distance B)

		Traverse Point Location Percent of Stack - Rectangular											
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
	6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7							92.9	81.3	72.2	65.0	59.1	54.2
	8								93.8	83.3	75.0	68.2	62.5
	9									94.4	85.0	77.3	70.8
	10										95.0	86.4	79.2
	11											95.5	87.5
	12												95.8

Rectangular
Stack Points
& Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Port Diam. (in) = _____
Number of Ports = _____

Tape Measure I.D. # _____ 675



No. 2 COMBINATION BOILER

Client New Indy
Location Catawba, SC
Date 6/24/2021

WO# 15730.001.008
Source No. 2 Combination Boiler

Source

Port	Point	O2	% difference from Mean	Absolute difference	CO2	% difference from Mean	Absolute difference	SO2	% difference from Mean	Absolute difference
B	1	12.30 ✓	1.1%	0.142	7.45 ✓	4.0%	0.288	324.5 ✓	0.9%	2.875
	2	12.80 ✓	2.9%	0.358	6.95 ✓	3.0%	0.213	308.0 ✓	4.2%	13.625
	3	12.45 ✓	0.1%	0.008	7.20 ✓	0.5%	0.037	323.5 ✓	0.6%	1.875
	4	11.80 ✓	5.2%	0.642	6.85 ✓	4.4%	0.313	335.0 ✓	4.2%	13.375
	5	12.70 ✓	2.1%	0.258	7.20 ✓	0.5%	0.037	313.5 ✓	2.5%	8.125
	6	12.10 ✓	2.7%	0.342	7.50 ✓	4.7%	0.337	303.5 ✓	5.6%	18.125
C	1	12.95 ✓	4.1%	0.508	7.15 ✓	0.2%	0.013	343.5 ✓	6.8%	21.875
	2	12.15 ✓	2.3%	0.292	7.15 ✓	0.2%	0.013	319.5 ✓	0.7%	2.125
	3	12.75 ✓	2.5%	0.308	6.80 ✓	5.1%	0.363	331.5 ✓	3.1%	9.875
	4	12.65 ✓	1.7%	0.208	6.90 ✓	3.7%	0.263	333.0 ✓	3.5%	11.375
	5	12.45 ✓	0.1%	0.008	7.20 ✓	0.5%	0.037	318.5 ✓	1.0%	3.125
	6	12.20 ✓	1.9%	0.242	7.60 ✓	6.1%	0.437	305.5 ✓	5.0%	16.125
Mean:		12.44			7.16			321.63		

Compliance Testing

Results	Minimally Stratified per O2
Sampling Approach	Sampled at three points in line with the highest concentration at 16.7%, 50%, and 83.3% or sampled at three points of 0.4m, 1.0m, and

EPA Part 60 Testing

Results	Not Stratified per O2
Sampling Approach	Sampled at 0.4m, 1.0m and 2.0m from stack wall or sampled at 16.7%, 50%, and 83.3% of duct diameter

EPA Part 75 Testing

Results	Stratified
Sampling Approach	Sampled at single point located no less than 1m from the stack wall and located on the same line as the traverse test

Per EPA Method 7E, a 12 point traverse was conducted to measure for stratification of the flue gas. According to Method 7E, the gas stream can stratified, minimally stratified, or not stratified. If at each point any pollutant or diluent is determined to be less than 5% or 0.5 ppm different than the mean concentration, the source is not stratified. If at each point any pollutant or diluent is determined to be greater than 5% but less than 10% or greater than 0.5 ppm but less than 1.0 ppm different than the mean concentration, the source is minimally stratified. If at any point the pollutants and diluents are greater than 10% or 1.0 ppm different than the mean concentration, the source is stratified.

Per EPA Part 60, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 10% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 10% different than the mean concentration, the source is stratified.

Per EPA Part 75, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 5% different than the mean concentration, the source is not stratified. If at any point the pollutants are determined to be less than 3.0 ppm less than 3.0 ppm or the diluents determined to be less than 0.3% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 5%, the pollutants are greater than 3.0 ppm, or the diluents are greater than 0.3% different than the mean concentration the source is stratified.

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm

Stratification Check

Response Time - 4 minutes, timed during 1st bias

Points selected by Table 1-2 of EPA Method 1

Port B Point 1

12:03	4121	12.4	2975	7.4	3136	312
12:04	4225	12.7	2954	7.4	3085	307
12:05	4466	13.4	2797	7.0	3128	312
12:06	4312	13.0	2586	6.4	3283	327
12:07	4211	12.7	2755	6.9	3351	334
12:08	4103	12.4	2875	7.2	3396	338
12:09	4088	12.3	2971	7.4	3304	329
12:10	4101	12.3	3009	7.5	3211	320

Point 2

12:11	4161	12.5	2981	7.4	3140	313
12:12	4185	12.6	2926	7.3	3082	307
12:13	4165	12.5	2917	7.3	3062	305
12:14	4166	12.5	2956	7.4	3041	303
12:15	4243	12.8	2927	7.3	3063	305
12:16	4316	13.0	2839	7.1	3105	309
12:17	4280	12.9	2776	6.9	3137	312
12:18	4224	12.7	2808	7.0	3055	304

Point 3

12:19	4216	12.7	2866	7.1	3021	301
12:20	4261	12.8	2847	7.1	3103	309
12:21	4249	12.8	2837	7.1	3168	316
12:22	4326	13.0	2802	7.0	3206	319
12:23	4288	12.9	2754	6.8	3258	325
12:24	4258	12.8	2778	6.9	3205	319
12:25	4165	12.5	2843	7.1	3194	318
12:26	4129	12.4	2916	7.3	3301	329

Point 4

12:27	4093	12.3	2960	7.4	3393	338
12:28	3796	11.4	3026	7.5	4221	421
12:29	3709	11.2	3320	8.3	4324	431
12:30	4274	12.9	3287	8.2	3850	384
12:31	4415	13.3	2769	6.9	3805	379
12:32	4279	12.9	2721	6.8	3499	349
12:33	4450	13.4	2833	7.0	3372	336
12:34	4482	13.5	2676	6.7	3354	334

Point 5

12:35	4397	13.2	2636	6.6	3369	336
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RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
12:36	4326	13.0	2722	6.8	3299	329
12:37	4298	12.9	2761	6.9	3269	326
12:38	4270	12.9	2778	6.9	3235	322
12:39	4218	12.7	2839	7.1	3201	319
12:40	4188	12.6	2884	7.2	3198	319
12:41	4197	12.6	2908	7.2	3187	317
12:42	4248	12.8	2908	7.2	3111	310
Point 6						
12:43	4304	13.0	2847	7.1	3137	312
12:44	4299	12.9	2793	6.9	3109	310
12:45	4368	13.1	2775	6.9	3196	318
12:46	4421	13.3	2705	6.7	3305	329
12:47	4431	13.3	2655	6.6	3253	324
12:48	4440	13.4	2638	6.6	3179	317
12:49	4460	13.4	2634	6.5	3132	312
12:50	4537	13.7	2590	6.4	3167	315
Port Change						
12:51	4637	14.0	2500	6.2	2698	269
12:52	6832	20.5	1490	3.7	269	27
12:53	6942	20.9	15	0.0	85	8
12:54	5605	16.9	118	0.2	2307	230
12:55	4420	13.3	2357	5.9	3325	331
Port C Port 1						
12:56	4332	13.0	2660	6.6	3321	331
12:57	4421	13.3	2721	6.8	3382	337
12:58	4342	13.1	2624	6.5	3466	345
12:59	4070	12.3	2747	6.8	3665	365
13:00	3992	12.0	3025	7.5	3853	384
13:01	4129	12.4	3074	7.7	3750	374
13:02	4237	12.8	2932	7.3	3483	347
13:03	4362	13.1	2823	7.0	3412	340
Point 2						
13:04	4480	13.5	2671	6.6	3330	332
13:05	4458	13.4	2583	6.4	3339	333
13:06	4571	13.8	2576	6.4	3321	331
13:07	4618	13.9	2452	6.1	3372	336
13:08	4541	13.7	2420	6.0	3429	342
13:09	4538	13.7	2489	6.2	3312	330
13:10	4551	13.7	2505	6.2	3301	329
13:11	4619	13.9	2479	6.2	3308	330

RUN DATA

Number 0

15730.001.008
Pulp Dryer, #3 Paper Machine,
#2-3 SDTVs, & #1-2 CBs
Emission Report

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
Point 3						
13:12	4531	13.6	2393	5.9	3470	346
13:13	4458	13.4	2436	6.1	3491	348
13:14	4280	12.9	2494	6.2	3423	341
13:15	4171	12.6	2694	6.7	3260	325
13:16	4253	12.8	2780	6.9	3269	326
13:17	4204	12.7	2720	6.8	3259	325
13:18	4213	12.7	2753	6.8	3297	328
13:19	4264	12.8	2746	6.8	3362	335
Point 4						
13:20	4201	12.6	2704	6.7	3341	333
13:21	4339	13.1	2742	6.8	3271	326
13:22	4315	13.0	2621	6.5	3271	326
13:23	4297	12.9	2618	6.5	3356	334
13:24	4158	12.5	2682	6.7	3460	345
13:25	4197	12.6	2810	7.0	3434	342
13:26	4191	12.6	2783	6.9	3403	339
13:27	4208	12.7	2755	6.9	3281	327
Point 5 (process changed)						
13:28	4138	12.5	2779	6.9	3255	324
13:29	4113	12.4	2851	7.1	3302	329
13:30	4068	12.2	2911	7.2	3294	328
13:31	4040	12.2	2904	7.2	3313	330
13:32	3939	11.9	2999	7.5	3304	329
13:33	3950	11.9	3074	7.7	3333	332
13:34	3810	11.5	3103	7.7	3408	339
13:35	3647	11.0	3250	8.1	3867	385
Point 6						
13:36	3452	10.4	3420	8.5	4106	409
13:37	3594	10.8	3572	8.9	3836	382
13:38	3761	11.3	3451	8.6	3698	368
13:39	3858	11.6	3268	8.1	3529	352
13:40	3944	11.9	3169	7.9	3491	348
13:41	3868	11.6	3110	7.7	3259	325
13:42	3941	11.9	3185	7.9	3215	320
13:43	4060	12.2	3067	7.6	3149	314
Point 5						
13:44	3997	12.0	2970	7.4	3147	313
13:45	3992	12.0	3025	7.5	3193	318
13:46	4066	12.2	3030	7.5	3154	314
13:47	4065	12.2	2962	7.4	3153	314

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**
Operator: **VD**
Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
13:48	4063	12.2	2932	7.3	3203	319
13:49	4068	12.2	2976	7.4	3148	314
13:50	4157	12.5	2933	7.3	3193	318
13:51	4119	12.4	2860	7.1	3201	319
Avg	4274	12.9	2772	6.9	3260	325

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration 1

Project Number: **15730.001.008**

Operator: **VD**

Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
Stratification Check cont.						
Port C Point 2						
13:56	4148	12.5	2790	6.9	3180	317
13:57	4210	12.7	2786	6.9	3180	317
13:58	4147	12.5	2761	6.9	3257	324
13:59	4216	12.7	2784	6.9	3290	328
14:00	4131	12.4	2758	6.9	3193	318
14:01	4139	12.5	2836	7.1	3102	309
14:02	4081	12.3	2848	7.1	3235	322
14:03	3994	12.0	2911	7.2	3181	317
Point 6						
14:04	4001	12.0	3014	7.5	3223	321
14:05	4121	12.4	2969	7.4	3164	315
14:06	4107	12.4	2855	7.1	3117	310
14:07	4033	12.1	2879	7.2	3157	314
14:08	3993	12.0	2972	7.4	3124	311
14:09	3990	12.0	2994	7.5	3132	312
14:10	3818	11.5	3036	7.6	3217	320
14:11	3864	11.6	3224	8.0	3181	317
14:12	4036	12.2	3125	7.8	3108	310
14:13	4037	12.2	2961	7.4	3020	301
Port Change						
14:14	3982	12.0	2976	7.4	3069	306
14:15	4051	12.2	3044	7.6	2597	259
14:16	6805	20.5	1871	4.6	308	30
14:17	6926	20.8	22	0.0	91	9
14:18	5009	15.1	367	0.9	2413	240
Port B Point 6						
14:19	3986	12.0	2860	7.1	3212	320
14:20	3971	12.0	3018	7.5	3032	302
14:21	3904	11.8	3065	7.6	2897	289
14:22	3947	11.9	3128	7.8	2928	292
14:23	4006	12.1	3071	7.6	2951	294
14:24	4007	12.1	3015	7.5	2973	296
14:25	4009	12.1	3019	7.5	3041	303
14:26	4010	12.1	3014	7.5	3055	304
Point 4						
14:27	4012	12.1	3009	7.5	2995	298
14:28	3996	12.0	3007	7.5	2988	298
14:29	3899	11.7	3051	7.6	3126	311
14:30	3877	11.7	3146	7.8	3154	314

RUN DATA

Number 0

Client: **New Indy**
Location: **Catawba, SC**
Source: **No. 2 Combination Boiler**

Calibration **1**

Project Number: **15730.001.008**

Operator: **VD**

Date: **24 Jun 2021**

Time	O ₂		CO ₂		SO ₂	
	mv	%	mv	%	mv	ppm
14:31	3916	11.8	3167	7.9	3081	307
14:32	3940	11.9	3110	7.7	2924	291
14:33	3899	11.7	3097	7.7	2878	287
Avg	4190	12.6	2804	7.0	2915	290

Sample and Velocity Traverse Point Data Sheet - Method 1

15730.001.008
Pulp Dyer, #3 Paper Machine,
#1-3 SDTVs, & #1-2 CBs
Emission Report

Client New Indy
Location/Plant Catawba, SC
Source No. 2 Combination Boiler

Operator VD
Date 21-Jun-21
W.O. Number 15730.001.008

Duct Type ☒ Circular ☐ Rectangular Duct Indicate appropriate type
Traverse Type ☐ Particulate Traverse ☐ Velocity Traverse

Distance from far wall to outside of port (in.) = C	129.0
Port Depth (in.) = D	9.0
Depth of Duct, diameter (in.) = C-D	120
Area of Duct (ft ²)	78.54
Total Traverse Points	12
Total Traverse Points per Port	6

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	4.4	5 1/2	14 1/2
2	14.6	17 1/2	26 1/2
3	29.6	35 1/2	44 1/2
4	70.4	84 1/2	93 1/2
5	85.4	102 1/2	111 1/2
6	95.6	114 1/2	123 1/2
7			
8			
9			
10			
11			
12			

$$\text{Equivalent Diameter} = (2 * L * W) / (L + W)$$

Traverse Point Location Percent of Stack - Circular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3			75		29.6		19.4		14.6		11.8	
	4				93.3		70.4		32.3		22.6		17.7
	5					85.4		67.7		34.2		25	
	6						95.6		80.6		65.8		35.6
	7							89.5		77.4		64.4	
	8								96.8		85.4		75
	9									91.8		82.3	
	10										97.4		88.2
	11											93.3	
	12												97.9

Duct Diameters Downstream from Flow Disturbance* (Distance B)

Traverse Point Location Percent of Stack - Rectangular

		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2			75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6
	3				83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7
	4					87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8
	5						90.0	75.0	64.3	56.3	50.0	45.0	40.9
	6							91.7	78.6	68.8	61.1	55.0	50.0
	7								92.9	81.3	72.2	65.0	59.1
	8									93.8	83.3	75.0	68.2
	9										94.4	85.0	77.3
	10											95.0	86.4
	11												95.5
	12												

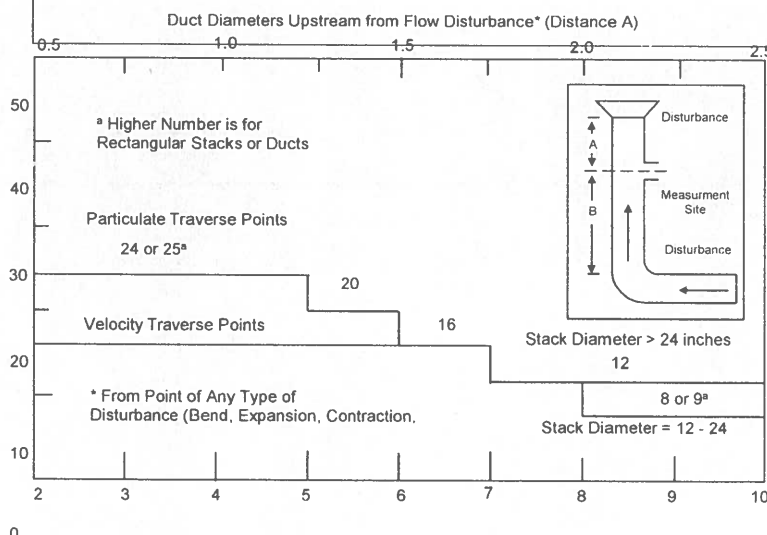
Rectangular Stack Points & Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Flow Disturbances

Upstream - A (ft)	45.0
Downstream - B (ft)	32.0
Upstream - A (duct diameters)	4.50
Downstream - B (duct diameters)	3.20

Diagram of Stack

stratification
check



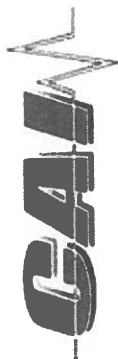
Port Diam. (in) = _____
Number of Ports = _____

Tape Measure I.D. # _____





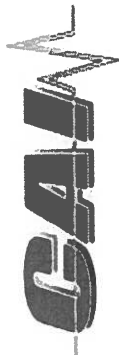
INTERFERENCE CHECKS



Method 7E-Interference Response

Applies to Models: 600 Series NDIR/PMD, 100/200/300 Series NDIR/PMD, ZRE w/PMD
Date of Test: 1/26/2011
Analyzer Type: PMD
Model: 602-P
Serial Number: U09018-M
Calibration Span: 20.7% O₂ balance N₂

Test Gas	Interfernt Concentration	Zero Response	Span Response	Interferent Response
SO ₂	513 ppm	0.000%	0.020%	0.020%
H ₂ O	0.82%	0.015%	0.020%	0.020%
N ₂ O	10.00 ppm	0.000%	0.000%	0.000%
NO	94.9 ppm	0.000%	0.000%	0.000%
NO ₂	99.8 ppm	0.000%	0.000%	0.000%
CO	900 ppm	0.000%	0.000%	0.000%
CH ₄	90.9 ppm	0.000%	0.000%	0.000%
HCl	27.99ppm	0.000%	0.000%	0.000%
Sum of Responses				0.004%
% of Calibration Span				0.019%



Method 7E-Interference Response

Applies to Models: 600 Series NDIR, 100/200/300 Series NDIR, ZRE
Date of Test: 1/26/2011
Analyzer Type: NDIR
Model: 602-P
Serial Number: U09018-M
Calibration Span: 20.2% CO₂/Balance N₂

Test Gas	Interfermt Concentration	Zero Response	Span Response	Interferent Response
SO ₂	102.6 ppm	0.000%	0.000%	0.000%
H ₂ O	0.82%	0.055%	0.055%	0.055%
N ₂ O	10.00 ppm	0.005%	0.010%	0.010%
NO	94.9 ppm	0.005%	0.025%	0.025%
NO ₂	99.8 ppm	0.010%	0.010%	0.010%
CO	100.0 ppm	0.010%	0.010%	0.010%
CH ₄	101.0 ppm	0.010%	0.010%	0.010%
HCl	27.99ppm	0.010%	0.010%	0.010%
Sum of Responses				0.013%
% of Calibration Span				0.064%



August 4, 2014

To Whom It May Concern:

Teledyne Advanced Pollution Instrumentation has introduced new instrument models to replace our existing E Series gas analyzers. The new instruments are collectively referred to as our T Series models.

The fundamental design and all critical wetted, electronic, electrical and analytical components of the T Series instruments are identical to the E Series, including: UV sources, photo detectors, power supplies, pressure and flow transducers, pneumatic connectors and valves as well as external signal I/O connectors for serial data (RS-232/485 and Ethernet), analog concentration and status signals, and control inputs.

The design of all analytical algorithms, signal processing and control software algorithms are identical as well, including A/D measurements, digital signal filtering, concentration calculations, calibration factors and algorithms, temperature and pressure compensation, temperature control loops.

The primary differences between the models E Series and T Series instrument designs are provided below:

1. The 2 line by 40 character vacuum fluorescent display module is replaced by a 7" color LCD display with a touch screen interface. The current human user interface is emulated on the color, graphical display. The touch screen is used to emulate the existing 8 button context sensitive keyboard.
2. The software platform has been upgraded to support the graphical display and touchscreen. Software routines have been added to support the new analog input option, and a native Ethernet port on the CPU.
3. An upgraded CPU board that includes hardware to drive the LCD display and is backwards compatible with the current E-series CPU is used for the T-series analyzers.
4. A new front panel assembly has been designed to house the new display, and a new 9-pin connector will be added to the rear panel to support the new analog input option.
5. The new analog input option is designed to permit users to display and log, using the analyzer's internal data logger, signals from meteorological and other miscellaneous external sensors. None of the external signals are used in the calculations that yield calibrated concentration.

Internal production testing of the T Series analyzers that have been manufactured to date has shown that they meet the same analytical specifications as the equivalent E Series analyzers, including noise, linearity, drift, and response time.

We feel that, due to the nature of the changes described above and the testing performed to date, the modifications will not affect the performance characteristics of the analyzer.

Best Regards,

A handwritten signature in black ink, appearing to read "Doug Haugen". The signature is fluid and cursive, with a large initial "D" and "H".

Doug Haugen
US National Sales Manager
Teledyne Advanced Pollution Instrumentation
(970) 224-3686
Douglas.haugen@teledyne.com

Method 7E Results for TAPI High Level Gas Analyzers

Method 7E Results for TAPI High Level Gas Analyzers					Instrument type						
Potential Interferent Gas	Potential Interferent Gas Concentration	M100EH	M200EH	M200EH Sensor	M201E	M300E	M300EH	M320E	M803E O2 Sensor	M803E CO2 Sensor	
SO2	20 ppmv		-0.167	0.012	-0.014	0.001	-0.058	-0.092	-0.106	-0.061	-0.015
NO	15 ppmv	0.162			0.002		-0.015	-0.054	-0.035	-0.051	-0.015
NO2	15 ppmv	0.053			-0.026		-0.059	-0.007	0.041	-0.051	-0.027
N2O	10 ppmv	-0.198	-0.166	-0.033	-0.036	0.040	0.113	-0.009		-0.041	-0.034
CO	50 ppmv	-0.084	-0.211	0.022	0.000	-0.005	-0.025	-0.030	-2.518	-0.164	-0.034
CH4	50 ppmv	-0.051	-0.461	-0.042	-0.043	0.037	-0.061	-0.128	-0.068	0.000	-0.015
H2	50 ppmv	-0.230	-0.253	-0.035	-0.038	0.030	-0.061	0.000	0.000	-0.010	-0.008
CO2	15%	0.361	-0.808	-2.397		-1.076	0.470	0.313	7.843	-0.026	
NH3	10 ppmv	0.000		0.000	0.000		0.000	0.000	0.000	0.000	0.000
HCl	10 ppmv	0.047	-0.133	0.168	-0.032	0.078	-0.002	-0.087	0.073	-0.043	-0.027
H2O	1%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Absolute Sum of Responses		1.186	2.198	2.710	0.191	1.268	0.803	0.720	10.685	0.447	0.175
Calibration Span		90 ppm	90 ppm	90 ppm	15 %	18 ppm	90 ppm	90 ppm	90 ppm	20.95 %	15 %
Percent of Calibration Span		1.318	2.442	3.011	1.273	7.046	0.892	0.800	11.872	2.134	1.163



APPENDIX H

PROJECT TEAM QUALIFICATIONS

Weston Solutions, Inc. Integrated Air Services Employee Qualifications					
Name	Title/Position	Education/Training	QSTI	Years of Experience	
				Total	Emission Testing
Allredge, Bryan	Emissions Testing Specialist	AAS - Electronic Engineering Technology Snead State Community College (1998)	QSTI 1 & 3	7	7
Bryant, Ashley	Report Coordinator	BS - English Ed. - Jacksonville State University (2011) MA - English - Jacksonville State University (2012)	QSTI 1	9	9
Ennis, Brock	Emissions Testing Specialist	BA - Urban Environmental Studies Birmingham-Southern College (2021)		1	1
Dubay, Van	Emissions Testing Specialist	BS - Horticulture Auburn University (2007)	QSTI 1, 3, & 4	6	6
Hammonds, Natalie	Quality Manager	BS - Environmental Science Auburn University (1998)	QSTI 1	23	18
Hartsky, Chris	Emission Testing Specialist	BA - Environmental Studies Washington College (2016)		10	5
Lestochi, Cory	Emissions Testing Specialist	BS - Biochemistry & Molecular Biology Penn State University (2019)	QSTI 1	1	1
Roberts, Wayne	Operations Manager	BS - Env. Science AU (1992)		28	27
Robinson, Tyler	Emissions Testing Specialist	BA - IDSC - Natural Resource Ecology, Sustainability - AU (2017)	QSTI 1	4	4
Simpkins, Templeton	Project Manager	BS - Zoology Auburn University (1997)	QSTI 1 & 3	20	20



APPENDIX I

PROCESS OPERATING/PRODUCTION DATA



APPENDIX I

PULP DRYER

Pulp Dryer Vent Testing

Pulp Dryer Vent - 6/26/21

Run #	Start Time	Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	1230	105	68106	0.21
2	1347	105	67090	0.18
3	1506	105	67567	0.17
Average:		105	67588	0.19



APPENDIX I

NO. 3 PAPER MACHINE VENTS

Paper Machine Dryer Vent Testing

#3 Dryer Vent - 6/24/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	937	2459	266	0.23
2	1042	2459	279	0.19
3	1145	2459	293	0.21
Average:		2459	279	0.21

#2 Dryer Vent - 6/24/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	1310	2459	297	0.19
2	1416	2459	310	0.17
3	1522	2461	296	0.16
Average:		2460	301	0.18

#1 Dryer Vent - 6/25/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	755	2651	294	0.08
2	900	2651	306	0.09
3	1005	2651	315	0.10
Average:		2651	305	0.09

#4 Dryer Vent - 6/25/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	1135	2651	331	0.10
2	1240	2628	328	0.10
3	1345	2615	328	0.11
Average:		2631	329	0.10



APPENDIX I

NO. 2 AND 3 SMELT DISSOLVING TANK VENTS

#6 Dryer Vent - 6/25/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	1555	2583	319	0.13
2	1715	2574	314	0.13
3	1820	2584	309	0.13
Average:		2580	314	0.13

#7 Dryer Vent - 6/26/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	945	2550	306	0.14
2	1050	2593	313	0.15
3	1155	2641	326	0.18
Average:		2595	315	0.16

#8 Dryer Vent - 6/26/21

Run #	Start Time	Reel Speed (FPM)	Steam Usage (10 ³ lbs/hr)	TRS Emissions (lbs/hr)
1	1315	2652	328	0.20
2	1420	2664	338	0.18
3	1524	2691	322	0.19
Average:		2669	329	0.19

Smelt Dissolving Tank Vent Testing

Smelt Dissolving Tank Vent - 6/27/21

SMELT DISSOLVING TANK VENT								RB #2		RB #3				
Run #	Start Time	Scrubber	Weak Wash	Weak Wash	Differential	Liquor Firing	Solids %	Lbs/Hr BLS	Liquor Firing	Solids %	Lbs/Hr BLS	Tons LBS/hr	TRS Emissions	
		Pump												
		Discharge												
		Pressure												
		(PSIG)	Spray Flow	Flow (gpm)	Pressure ("	Rate (gpm)			Rate (gpm)				(lbs/hr)	
			(gpm)		Water)									
1	1100	55.9	93.3	91.6	4.8	201.7	70.3	92950	314.8	69.0	142388	117.7	1.02	
2	1222	55.9	93.7	90.2	4.8	205.8	70.4	94974	315.5	69.0	142704	118.8	1.28	
3	1344	55.9	93.7	90.6	4.7	199.1	70.4	91882	315.5	69.1	142911	117.4	1.10	
Average:			55.9	93.6	90.8	4.8	202.2	70.4	93269	315.3	69.0	142668	118.0	1.13



APPENDIX I

No. 1 COMBINATION BOILER

Combination Boiler #1

Condition 1: With NCGs, with SOGs

23-Jun-21

Run #	Start Time	Steam Rate (10 ³ lbs/hr)	Bark Rate (Tons/Hr)	Gas Flow (10 ³ SCF/Hr)	TDF (TPH)	NCG Scrubber Flow (GPM)	NCG Scrubber pH (SU)	Stripper Foul Condensate Flow (GPM)	Foul Condensate Flow (GPM)	Hard Pipe		LVHC Flow to Boilers (SCFM)	SOG Flow to Boilers (SCFM)	HVLC Flow to Boilers (SCFM)	Pulp Production (ODT/Hr)	SO ₂ Emissions (lbs/hr)	SO ₂ Emissions (lbs/ODT Pulp)	TRS Emissions (lbs/hr)
1	1158	208	25.1	80.8	1.37	40	10.9	458	146	1585	621	11575	49.7	262.7	5.29	0.56		
2	1400	225	29.3	68.8	1.37	40	10.9	491	152	1595	1219	11048	54.0	362.5	6.71	0.49		
3	1541	207	24.8	81.2	1.37	40	10.9	491	45	1578	1136	11009	64.0	457.4	7.15	0.50		
Average:		213	26.4	76.9	1.37	40	10.9	480	114	1586	992	11211	55.9	360.9	6.46	0.52		

Condition 2: With NCGs, without SOGs

23-Jun-21

Run #	Start Time (10 ³ lbs/hr)	Steam Rate	Bark Rate (Tons/Hr)	Gas Flow (10 ³ SCF/Hr)	TDF (TPH)	NCG Scrubber Flow (GPM)	NCG Scrubber pH (SU)	Stripper Foul Condensate Flow (GPM)	Foul Condensate Flow (GPM)	Hard Pipe		LVHC Flow to Boilers (SCFM)	SOG Flow to Boilers (SCFM)	HVLC Flow to Boilers (SCFM)	Pulp Production (ODT/Hr)	SO ₂ Emissions (lbs/hr)	SO ₂ Emissions (lbs/ODT Pulp)	TRS Emissions (lbs/hr)
1	1824	230	26.3	94.9	1.37	40	10.9	489	123		1587		10515	74.1	404.4	5.46	0.43	
2	2019	216	23.7	97.5	1.37	40	10.9	491	184		1593		10377	74.7	452.9	6.06	0.42	
3	2202	220	25.2	92.4	1.37	40	10.9	490	152		1570		10573	79.2	450.8	5.69	0.46	
Average:		222	25.1	94.9	1.37	40	10.9	490	153		1583		10488	76.0	436.1	5.74	0.44	



APPENDIX I

No. 2 COMBINATION BOILER

Combination Boiler #2

Condition 1: With NCGs, with SOGs

24-Jun-21

Run #	Start Time	Steam Rate (10 ³ lbs/hr)	Bark Rate (Tons/Hr)	Gas Flow (10 ³ SCF/Hr)	TDF (TPH)	NCG Scrubber Flow (GPM)	NCG Scrubber pH (SU)	Stripper Foul Condensate Flow (GPM)	Hard Pipe Foul Condensate Flow (GPM)	LVHC Flow to Boilers (SCFM)	SO ₂ Flow to Boilers (SCFM)	HVLC Flow to Boilers (SCFM)	Pulp Production (ODT/Hr)	SO ₂ Emissions (lbs/hr)	SO ₂ Emissions (lbs/ODT Pulp)	TRs Emissions (lbs/hr)
1	1445	219	39.0	125.3	1.37	40	10.9	491	190	1572	1231	10253	87.8	508.7	5.79	0.77
2	1630	224	31.1	146.4	1.37	40	10.9	490	186	1576	1231	10277	88.6	507.2	5.72	0.63
3	1806	241	33.6	146.4	1.37	40	10.9	490	190	1580	1231	10300	88.6	496.1	5.60	0.63
Average:		228	34.6	139.4	1.37	40	10.9	490	189	1576	1231	10277	88.3	504.0	5.71	0.68

Condition 2: With NCGs, without SOGs

25-Jun-21

Run #	Start Time	Steam Rate (10 ³ lbs/hr)	Bark Rate (Tons/Hr)	Gas Flow (10 ³ SCF/Hr)	TDF (TPH)	NCG Scrubber Flow (GPM)	NCG Scrubber pH (SU)	Stripper Foul Condensate Flow (GPM)	Hard Pipe Foul Condensate Flow (GPM)	LVHC Flow to Boilers (SCFM)	SO ₂ Flow to Boilers (SCFM)	HVLC Flow to Boilers (SCFM)	Pulp Production (ODT/Hr)	SO ₂ Emissions (lbs/hr)	SO ₂ Emissions (lbs/ODT Pulp)	TRs Emissions (lbs/hr)
1	1000	234	35.7	132.7	1.37	40	10.9	482	155	1579	10475	10475	87.2	383.2	4.39	0.86
2	1135	225	30.8	147.8	1.37	40	10.9	479	252	1573	10425	10425	84.3	380.0	4.51	0.82
3	1315	245	30.6	141.7	1.37	40	10.9	482	97	1571	10500	10500	84.2	366.2	4.35	0.63
Average:		235	32.4	140.7	1.37	40	10.9	481	168	1574	10467	10467	85.2	376.4	4.42	0.77

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OF
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